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PSYCHOCHEMISTRY

SOME PHYSICOCHEMICAL FACTORS IN MENTAL DISORDERS

CHAIRMAN'S ADDRESS *

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The application of another of the fundamental sciences to the study of behavior, namely biochemistry, is being witnessed today, and the designation psychochemistry is the natural result.

Advances in a science emanate from those who, already versed in two different disciplines, work in the field of knowledge lying between them. Mere collaboration of two different experts will not be so productive, since neither can be completely in sympathy with the point of view of the other. Few biochemists are versed in psychiatry, however, and few psychiatrists have more than a bowing acquaintance with such terms as colloidal dispersion, interfaces, ionic dissociation and oxidation-reduction. Psychochemists, therefore, will be grounded in biochemistry as well as in psychiatry and will investigate the problems of normal and abnormal behavior from the standpoint of altered chemical reactions in that master tissue of the body, the central nervous system. The failure of microscopy to demonstrate structural alterations in the so-called functional psychoses is driving the investigator into new channels of research. The results of this activity are just beginning to appear and will grow tremendously in volume. What future accomplishments may be witnessed are beyond human power to foretell.

Dementia praecox, manic-depressive psychosis, paranoia, epilepsy, represent four groups of disorders that rest on no constant well defined alteration in the histology of the nervous system. None can doubt, however, that there exists an underlying structural deviation, provided such a definition is pushed to its logical limits to include molecular and ionic imbalances. Probably the changes are much more gross than that and will be readily demonstrable when proper methods are applied. Such work as that already performed is sufficient to enable one to erect hypotheses concerning the probable underlying physicochemical mechanisms concerned in some of these major abnormalities. Most clearly indicated is the rôle of water balance in epilepsy, although this also involves such mechanisms as hydrion concentration, oxidation-reduction and salt equilibrium. Moreover, the rôle of defective oxidation in the nervous system in schizophrenia also rests on considerable evidence, and the striking parallels, from the chemical standpoint, between the phases of manic-depressive psychosis and the hibernation cycle of certain mammals, point to some phasic alteration in colloidal dispersion and electric potential. In view of its newness it seems desirable to bring before this group a survey of the field, and the possibilities of its further development.

The brain is an organ composed of many parts, different in structure and in function, harmoniously integrated into a unit of amazing versatility. Nevertheless it is still an organ, dependent as any other for its proper functioning on satisfactory conditions of nutrition, oxygenation, hydration, excretion. These major needs, however, comprise many other factors, as yet more obscure, that influence the working of the brain. Among such reaction systems that fluctuate normally between narrow limits may be mentioned electric potential, oxidation-reduction, aggregation and dispersion, hydration and dehydration, sodium-potassium and calcium-magnesium ratios, and hydrogen ion concentration. Too great a shift from equilibrium in any one of these systems is certain to be attended by manifestations of disordered function of the brain. Conditions are made more complex, moreover, by the fact that no single system can be thrown out of equilibrium without exerting an effect on one or more different systems, the repercussions of which may lead to generalized disturbances of phasic recurrence and dramatic manifestations. These conditions are worthy of further investigation, since the recognition of the shifts in equilibrium associated with alterations in the functional activity of the brain will be the first step in the search for some method of restoring or maintaining the normal balance.

It has been recognized for years that states of fatigue alone, and of intoxication, result in histologic alteration of the cells of the nervous system. If such changes are recognizable by the gross methods that involve complete coagulation and desiccation of the tissue, much more should be determinable by the examination of living tissue, even if the methods are necessarily indirect. Study of the metabolism of the brain is already furnishing results of the first magnitude.

OXIDATIONS IN THE NERVOUS SYSTEM

Oxygen and dextrose are brought to the brain by the carotid artery. The blood in the internal jugular vein contains much less oxygen and dextrose but more carbon dioxide than does that from other accessible veins.[1] This fact alone indicates that the brain has a high rate of metabolism. Chopped cortical tissue fixes more than its volume of oxygen every hour. Oxygen utilization is doubled by the addition of 0.25 per cent of dextrose, and is undoubtedly much higher

* Read before the Section on Nervous and Mental Diseases at the Eighty-Second Annal Session of the American Medical Association, Philadelphia, June 11, 1931.

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in the living state. The mechanism of utilization is being clarified by various researches.[2] An important substrate would seem to be carbohydrate, and the dextrose is converted into lactic acid before it can be completely oxidized. The dehydrase mechanisms in cerebral cortical tissues are very active, and the cortex also gives a vigorous indophenol-oxydase reaction. Cytochrome, that elusive compound present in every living cell, one which is clearly recognized by spectroscopy but has not yet been analyzed, is abundant in the cortex. Glutathione and other compounds containing the sulphydryl group are yet to be investigated. Iron and other metallic substances, essential catalysts for the utilization of oxygen, are found in considerable quantities in the cerebral cortex.

The effects of known deficiencies in oxygenation of the brain are often striking. The psychic phenomena of circulatory failure, of partial suffocation, of profound anemia, of mountain sickness, of carbon monoxide poisoning, are often severe and may dominate the clinical picture. The cardiologist, particularly, is apprehensive when his patients suffering from congestive failure give voice to delusions and hallucinations. These mental phenomena can often be banished abruptly by supplying an abundance of oxygen to the brain. Equally characteristic psychic phenomena result from a marked increase in the amount of oxygen supplied to the brain. The elation and sense of well being observed in individuals under markedly increased atmospheric pressures, as in caissons, may progress to maniacal exhilaration. Little is known concerning chemical methods of altering directly the oxygen utilization of the brain, but the thyreogenic disorders of general metabolism have obvious psychic coordinates both in the positive and in the negative aspects.

Deficiency in the oxidative processes in the nervous system would seem to play an important rôle in the phenomena of schizophrenia. In some individuals the deficiency would seem to be generalized, and possibly even thyreogenic, since thyroid medication proves curative; but more often the deficiency would seem to be partial, possibly limited to the brain. The effects of such a deficiency are manifested, however, in the general metabolism of the body. The oxygen consumption and the metabolism of nitrogen and of carbohydrates is generally below the average, and in some patients definitely subnormal.[3] Further evidence of disordered metabolism is seen in the inverted homoclastic response and in subnormal reactions to changes in temperature, to work, and to the injection of insulin, epinephrine, thyroxine and other potent pharmaceuticals. Particularly is the metabolic disharmony evident in the control of the acid-base equilibrium.[4] This equilibrium depends for its maintenance on the activity of the kidneys in excreting bases and of the lungs in excreting carbon dioxide. In schizophrenia the response of the kidneys is normal, but the excretion of carbon dioxide is impaired so that the condition of the patient with dementia praecox resembles that of the sleeping normal individual in being shifted over to the acid side. This would appear to be due to the relative inexcitability of the respiratory center, since the alkaline tide after sleep and food is absent, the alveolar carbon dioxide tension is high, and the pulmonary ventilation is not adequately increased by the administration of 2 per cent carbon dioxide in the inspired air.

Chemical examination of the brain in cases of dementia praecox has indicated deficiencies in neutral sulphur [5] and in catalytic iron,[6] both of which observations are of importance in indicating inherent deficiencies in oxidative processes.

It may be said with considerable assurance that the primary disturbance in schizophrenia lies in the cerebral cortex. This is most convincing as regards the catatonic state, since the phenomena of this condition may be imitated so closely by the administration of bulbocapnine, a drug that has been proved to act on the cerebral cortex.[7] Narrower localization in the ordinary regional sense is not yet possible, but the cerebral cortex should be considered as a three dimensional organ, one with depth as well as area, with different functions attributable to the different laminae. The third layer would seem to be related to incoming stimuli and the fifth to outgoing. It is just these two layers that have been incriminated by neuropathologists as being most markedly affected by pathologic changes in dementia praecox.[8] In a few cases showing catatonic symptoms I have observed a rather marked deficiency in the reaction for catalytic iron in the deepest layers of the frontal cortex, while the other layers were comparatively normal. The condition is not so well defined in hebephrenic reaction types. In catatonia, therefore, there may be a deficiency in powers of oxygen utilization widely disseminated throughout the deeper layers of the cerebral cortex and not necessarily limited to the so-called motor cortex.

The recent dramatic results obtained by the administration of carbon dioxide and oxygen, and of sodium amytal to catatonic patients are imperative in calling for an investigation of the changed metabolic conditions in the brain. Oxygen, in the first type of experiment, is given in from three to five times the concentration that ordinarily obtains, but oxygen is ineffective if administered alone. Even so, the oxygen tension may not be sufficiently high. I have observed considerable changes in the behavior of a catatonic patient when subjected to high oxygen tensions in a compression chamber. Under from six to eight atmospheres he became hilarious, ceased his jerkings, talked a little and wrote replies to questions. The effect wore off when the pressure was reduced.

Carbon dioxide produces a great increase in pulmonary ventilation, a pronounced fall in p_H, and at the same time dilatation of the cerebral arterioles.[9] All these would tend to promote oxygen utilization in the cortex, and the carbon dioxide itself would seem to be a specific stimulant to cellular function. The mechanism concerned in the response to amytal is not yet clarified, but it would seem possible that during the deep unconsciousness sufficient reacting substances

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might accumulate in the cortical cells to enable them to function more actively for a short period.

In brief, then, the manifestations of schizophrenia may tentatively be explained, from the biochemical standpoint, on deficiency in oxidative processes in the cerebral cortex. More fundamentally, however, there appears to be, in schizophrenia, a generalized inherent tendency to deficient oxidative processes, and dementia praecox may eventually prove to be a deficiency disease just as definitely characterized and almost as effectively handled as scurvy or rickets. Whether there is a dietary deficiency (meats, iron?) or whether some toxic substances are formed in the intestinal tract (amines, cyanides?) or whether emotionally restricted respiratory exchange leads to suboxidation,[10] it is impossible to state. Nevertheless, it is enough to work with and observe the inhabitants of the back wards to suspect strongly that these patients are suffering from some vicious circle of metabolic disorder that we are powerless, as yet, to interrupt.

WATER BALANCE AND COLLOIDAL DISPERSION

Water exists in the nervous system in different bindings. There is free water in the ventricles, in the tissue interstices, and in the cells, the former holding sodium ions and the last potassium. Water also exists in bound form both in the nucleus and in the cytoplasm. Disturbances in water balance in the nervous system are associated with pronounced psychic phenomena. The delirium of febrile states is attributable to increase in the bound water of the cytoplasm with decrease in the interstitial moiety. The stupor, convulsions, collapse and coma of water intoxication are due to increase in the interstitial water with disturbance of the osmotic equilibrium [11] and can be remedied almost instantly by administration of concentrated saline solution intravenously. Fever can be produced by dehydration alone, through loss of free water from the body.

The water balance is intimately bound up with the acid-base equilibrium, carbohydrate utilization and ionic equilibrium. A positive water balance may be corrected by the administration of acids, by reduction of water intake, and by the replacement in the diet of carbohydrates by hydrocarbons.

In epilepsy there is clearly indicated a disturbance in the water balance. Not only does the weight of an epileptic patient fluctuate considerably, with retention of water before and with diuresis after seizures,[3] but the measurement of the excretion of the various bases indicates that the water concerned is interstitial in nature.[12] The removal of this interstitial water by starvation is effected because the excretion of sodium continues high for several days after the beginning of the fast.

Similar results may be obtained by salt starvation and by water restriction. Somewhat more complex is the effect of the ketogenic diet. Carbohydrates require considerably more free water for their proper metabolism than do fats, probably about 3 cc. per gram, and conditions of acidosis associated with the ketogenic diet are apt to lead to still further exsiccation of the tissues. It is a significant fact that epilepsy and diabetes are never seen in the same individual, although it is not unknown to have convulsions in a diabetic and glycosuria in an epileptic patient.[13] Excessive dehydration may lead to convulsive seizures and violent muscular movements to glycosuria; but, as far as water balance is concerned, epilepsy and diabetes are as much polar opposites as are hyperthyroidism and myxedema. The relationship of the islets to diabetes has prompted examination of the pancreas in epileptic patients, but while hyperplasia of the islets has been found it is by no means constant and never of striking degree.

Just what it is that touches off the fit has not yet been determined, but the vasospastic phenomena accompanying natural convulsions and the convulsive effects of sudden cerebral anemia are strongly indicative of a vasomotor mechanism. The most attractive hypothesis advanced for the explanation of epilepsy points to the hypothalamus in which control would appear to be vested over both the water metabolism and the muscular tone of blood vessels.[14] The nature of the mechanism is yet unexplained.

In considering colloidal dispersion, one is standing on still more debatable ground. Recent considerations of this equilibrium are nevertheless demanding attention. Alcohol and other anesthetics produce a certain degree of coagulation of the cytoplasm of cells. Certain stimulants seem to have the reverse peptizing effect. The members of the lyotrope series have varied effects on the dispersion and aggregation of colloids. From correlation of a number of such observations, a hypothesis of mental activity has been erected the full significance of which is yet to be determined. The behavior of a colloid is dependent primarily on hydration and charge, but many factors, such as hydrion concentration, electrolyte equilibrium and osmotic pressure, are intimately concerned. That the energy output of the brain may be influenced by alteration in colloidal aggregation and dispersion is undoubted, but there is less evidence for suggesting that there exist natural imbalances that are manifested in disturbances of behavior. Nevertheless it has been argued with some justification that if the behavior of the individual can be altered by the exhibition of a coagulating agent on the one hand or by a peptizing agent on the other, there is evidence of some inherent disturbance in the colloidal system. It is well known that bromides (peptizing agents) relieve excitement and that moderate doses of alcohol and morphine (coagulating agents) relieve depression, but it is not safe to assert that the relief of excitement or depression is due alone to the lyotrope action of these agents. Still less certain is the hypothesis vigorously advanced [15] that, because bromides are effective, the thiocyanates will be still more so. Between the bromide and the thiocyanate ion in the lyotrope series stands the iodide ion, an ion that is relatively inert as far as psychic activity is concerned. It is known that the thiocyanates can produce mental disturbances, but these compounds have been used only for the reduction of high blood pressure, and the mental phenomena observed might have been due to diminished cerebral circulation or to other by-effects not yet understood.

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Evidence of disturbed colloidal dispersion in mental disorders is accumulating. Examination of fresh blood by dark field reveals interesting phenomena of aggregation in states of considerable activity, with a tendency to dispersion in stuporous states.[16] The erythrocytes in manic patients tend to be somewhat smaller than do those in depressed conditions. In a comparable pair of manic-depressive patients who died very suddenly, I found that the nuclei of a large proportion of the cortical ganglion cells in the depressed patient were large and vesicular, while those in the manic patient were compact and hyperchromatic.

Metabolic disturbances in manic-depressive psychosis need further study along the lines indicated. It is known that the sugar tolerance is often disturbed and that a familial tendency to diabetes exists. Phasic elimination and retention of water and of nitrogenous moieties has been described.[17] Although the outward manifestations of excited and depressed phases may bafflingly resemble those of schizophrenia, some different mechanism is presumably at work on account of the greater sensitivity of the cycloids to work and to certain drugs.

The most graphic parallel yet drawn with manic-depressive psychosis is that of the hibernation cycle in certain mammals.[18] The alterations in total metabolism, in calcium balance, in endocrine activity, are very striking and are probably dependent on central regulation. Whether this control is vested in the cortex is quite unknown, but it would seem probable that the various manifestations, biochemical, endocrine and behavioristic, are but different facets in a many sided figure, the nucleus of which is to be sought in an inherited tendency to phasic alterations in colloidal dispersion in the central nervous system.

CONCLUSIONS

"The art of living consists in drawing correct conclusions from inadequate data." The data here presented are by no means to be taken as final and convincing. They rather point the way to further studies. The development of a science may be likened to the growth of a tree in stony soil. The rootlets meet many obstructions and are perforce deviated from their straight path. Other rootlets penetrate small crannies and eventually thrust asunder huge boulders. Still others utilize openings made for them by the rootlets of other trees. There is always the possibility of further advance, and, if the advance continues, growth progresses. The parallel does not stop here. In science as well as in the tree, the fundamentals are to be found in the groundwork, in the roots; and the fruit, the practical application to the benefit of humanity, is to be found in the superstructure. Neither can live forever if separated from the other. A great deal is known about the clinical manifestations of the psychoses but very little about the roots. Could one, by operating on those psychiatric roots, bring about such alterations as characterize the artificially dwarf evergreens that are socially acceptable in the modern parlor, one might look for equally beneficial results in the adaptation of certain personalities that seem inherently bound to fit badly in society.

I do not intend to belabor the question as to which came first, the biochemical imbalance or the disordered behavior. It would be no more profitable than reverting to the chicken and the egg controversy. Nor do I wish, by emphasizing these biochemical mechanisms, to throw doubt on the value of psychotherapy in the handling of many conditions that undoubtedly are endowed with biochemical correlates. My intent will have borne fruit if I leave in your minds the idea that there are certain biochemical processes associated with disorders of behavior, and that if we are equipped with a knowledge of their workings we may be able, by supplying deficiencies, by preventing excesses, by controlling periodic shifts in various equilibriums, to bring about artificially conditions that approach the normal. The psychochemist has a large order.

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THE MECHANISM OF EDEMA

IN RELATION TO THE CLINICAL CLASSIFICATION OF BRIGHT'S DISEASE (NEPHRITIS) *

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The naming by the Section on Practice of Medicine of an annual lectureship, the Frank Billings lecture, is an honor to Dr. Billings which he richly deserves. Powerful in physique, big of mind, versed in the lore of medicine, knowing not fear to act, when action was right, yet gentle and kindly to those afflicted with disease, Dr. Billings has been among us a power for good in the progress of medicine and an esteemed exemplar of the practice of medicine. To be asked to honor Dr. Billings by giving this lecture is to me a great gratification.

Born of many men have come many classifications of Bright's disease, or nephritis. Varied criteria of differentiation have been used. Each way of grouping the cases has taught us to think in the terms of some student of the subject and to apply to the study of our patients the knowledge acquired by these different observers. Each classification has added something of value to our knowledge. A classification of a disease has two important ends, to epitomize our knowledge of that disease and to improve our care of patients suffering therefrom. Any classification, to be useful, should be easily applied in the sense of not requiring complicated procedures for subdivision of the cases, and should be one that will include in its groups the great majority of the patients that have the disease.

In the present state of our knowledge of Bright's disease I have found edema a very useful basis of classification along with a time division into acute, subacute and chronic. Using these criteria I have formed a clinical classification that has been very helpful to me.

Properly to apply edema as one of the criteria of classification of Bright's disease or nephritis necessitates a reasonable understanding of the pathologic physiology of edema, and although the mechanism of edema is very complex and as yet far from thoroughly

* The Frank Billings Lecture.
* Read before the Section on Practice of Medicine at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

understood, recent investigation carried on in many different laboratories has added much to our knowledge of it, so that we are in a position so to formulate this knowledge as to aid in an understanding of the several types of Bright's disease.

It is obvious that edema or the appearance of abnormal amounts of fluid in tissues and body cavities does not arise always from the same cause or, so to speak, does not always have the same mechanism. This permits of our subdividing edema into seven clinical varieties:

Cardiac edema.
Hepatic edema.
Renal edema.
Nutritional edema.
Anemic edema.
Inflammatory edema.
Anaphylactic edema.

Of these varieties of edema, cardiac and hepatic edema have a very similar mechanism; in the same way renal, nutritional and anemic edemas are closely related as are inflammatory and anaphylactic edemas.

In the mechanism of these several varieties of edema there are concerned six significant factors:

Filtration pressure.
Osmotic pressure.
Permeability of vessel wall.
Salt content of the tissues.
Lymphatic drainage.
Nervous control.

The exact part played by each factor is not fully understood as yet, and, when they act in various combinations, great complexity may enter into the process. However, a reasonable understanding of the mechanism of edema may be obtained by analysis of the action of some of these factors in a somewhat schematic way. It is not assumed that these schemata express exactly what goes on; they do serve, however, to help in comprehending the various forms of edema and are given to that end.

Intravascular or filtration pressure has been measured directly in human arteries, veins, arterioles, venules and capillaries by methods of sphygmometry and cannulazation, so that we know what are the actual average normal pressures for man in them as well as the variations from normal encountered under various pathologic conditions. Also the osmotic pressure exerted by the important constituents of the blood has been measured directly by appropriate physical methods.

Whether there is edema or not, among other things, depends on the relation between intravascular or filtration pressure in vessels of different size and the osmotic pressure exerted by the constituents of the circulating blood within these vessels, the wall of the vessel being permeable to fluid, as it is.

This relationship may be expressed diagrammatically (fig. 1) as follows: Let us assume that in a particular instance the intravascular pressure in the capillary is 23 mm. of mercury, a figure consistent with numerous observations, and that on the side of the capillary toward the arteriole and larger artery this pressure is a rising one, while on the side of the capillary toward the venule and larger vein it is a falling one, assumptions that agree with actual observations. If this is true, then, on the arteriolar side of the center of the capillary, intravascular or filtration pressure is greater than 23 and on the venule side is lower than 23.

Again let us assume that the various constituents of the blood plasma in this particular instance exert an osmotic pressure of 23 mm. of mercury, an assumption in agreement with measurements that have been made. If some of these constituents pass through the vessel wall, then there is a corresponding fall in osmotic pressure in the direction of the flow of blood current. This fall, however, is definitely and considerably less than that which takes place in the intravascular pressure in the same region.

These changes result in the intravascular pressure, as shown in figure 1, being greater than the osmotic pressure on the arteriolar side and lower on the venous side, while at some midpoint they exactly balance. Intravascular pressure tends to drive fluid and dissolved electrolytes out of the vessel, while osmotic pressure tends to draw them into the vessel. When there is an excess of intravascular pressure above osmotic pressure, there is a flow of fluid from vessel to surrounding tissue, and when intravascular pressure is below osmotic pressure there is a flow of fluid from tissue to vessel. When these two flows balance there is no accumulation of fluid in the tissue. When the flow into tissue is faster than out of tissue, fluid accu-

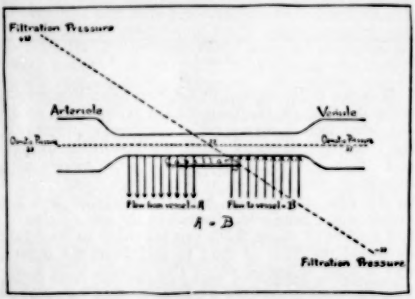

Figure 1.

mulates in the tissue; or, in other words, edema results. Changes in either osmotic pressure or intravascular pressure vary these relationships and may lead to edema.

Let us assume that osmotic pressure falls to a level of 10 mm. of mercury, a figure that actually has been measured in patients. What is the result? Intravascular pressure now is considerably higher than osmotic pressure on the arteriolar side and considerably less than osmotic pressure on the venule side of the capillary, as shown in figure 2. This causes a faster inflow of fluid into tissue on the arteriolar side and a slower outflow of fluid from tissue on the venule side, with a consequent edema as just explained, brought about in this instance by a lowering of osmotic pressure. Such a fall in osmotic pressure is observed in patients with certain forms of nephritis incident to a lowering of the amount of plasma protein with a relative increase of globulin in ratio to albumin.

In contrast to the foregoing, let us assume that osmotic pressure remains at a normal value but that intravascular pressure departs from normal values. Obviously this would change pressure relationships from those existing normally. Apparently the most commonly encountered change is a rise in the normally

low pressure on the venule side of the capillary. This occurs in cardiac decompensation. If this happens, as shown in figure 3, there would be, perhaps, no change in the relation between osmotic pressure and intravascular pressure on the arteriolar side of the capillary, but on the venule side there would be a decrease in flow from tissue to venule and so an accumulation of tissue fluid or edema, because a higher than normal filtration pressure at this point retards flow from the tissues.

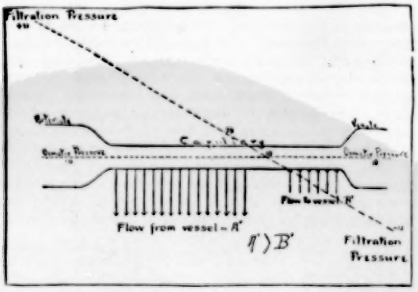

Figure 2.

It is not to be implied that edema invariably results when the changes, diagrammatically represented, occur, for other factors may exert a retarding influence. If the vessel wall increases in permeability, owing to some sort of damage, no longer does it serve merely as a membrane filter; leakage of fluid brings about changes in the flow of fluid on both the arteriolar and the venule side. Similarly, changes in the salt or electrolyte content of tissue fluids can act either to accelerate or retard the flow of fluid to and from the tissues, and in some forms of edema this appears to be a significant factor. Lymphatic drainage plays a part in removing fluid from the tissues into the blood stream, but this factor has had little study. Finally there is a central nervous control of blood flow centered in the diencephalic region that plays a part. Further, there is evidence, too, of a direct nervous control from the diencephalon over tissue fluids; some believe that this is all important while others think that it merely controls these other factors, and this at present seems the more probable. Obviously, the mechanism is a complex one and as yet far from fully understood.

If we apply the presence of edema as an important criterion of classification, patients with Bright's disease may be grouped as follows:

1. Acute nephritis.
   Subacute nephritis.
   (*a*) Subacute nephritis with renal edema; nephrosis.
   (*b*) Hemorrhagic nephritis.
2. Chronic nephritis.
   (*a*) With renal edema.
   (*b*) Without renal edema.

To these may be added:

3. Essential vascular hypertension progressing into chronic nephritis.
4. Renal arteriosclerosis progressing into chronic nephritis.

It is important to bear in mind that the form of edema referred to is renal edema. In the edema of acute nephritis probably the chief causative factor is an increased permeability of the vessel wall of some unknown toxic cause. In the renal edema of subacute and chronic nephritis a lowered osmotic pressure seems the chief causative factor, with variations in the electrolyte content of tissue fluids being an added causative factor. Patients with chronic nephritis without renal edema frequently in the course of their illness develop cardiac insufficiency and have cardiac edema in which changes in intravascular filtration pressure play the significant part in the mechanism. As individual patients are studied, as a rule, it is easy to decide whether there is renal edema or cardiac edema present.

From a pathologic point of view, in all of these different varieties of nephritis under 1 and 2, except in chronic nephritis without renal edema, glomerular lesions are prominent. In one of them, the so-called nephrosis, the glomerular lesion is more a functional than an anatomic one, as I have discussed elsewhere.[1] In chronic nephritis without renal edema the lesion primarily is a vascular nephritis, the chronic interstitial nephritis of older writers. In these patients hypertension, cardiac insufficiency and eventually cardiac edema usually prevail. In all the others, cardiac insufficiency occurs only in the end stages of a few of the patients with chronic nephritis with renal edema, as a rule after the renal edema has disappeared. These are the secondarily contracted kidneys of some classifications. Hypertension develops in them in their later course. In the toxic stage of some patients with acute nephritis, hypertension develops to disappear with improvement in the patient's condition, but cardiac insufficiency is very rare.

From an etiologic point of view, all these groups under 1 and 2 except chronic nephritis without renal edema have a bacterial cause, chiefly some variety of streptococcus, and develop chiefly in the sequence of an infection of the upper respiratory tract. Chronic nephritis without renal edema is to be grouped as one

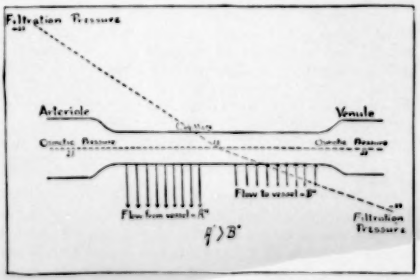

Figure 3.

of the degenerative diseases, and at present the cause is unknown.

Essential vascular hypertension progressing into chronic nephritis (3) after the renal lesion has developed is identical with chronic nephritis without renal edema. It is added because it represents a sequence that is seen so often in clinics as to justify separating it as a special syndrome. To a much less extent a similar sequence to renal arteriosclerosis appears to

1. Christian, H. A.: Nephrosis: A Critique, J. A. M. A. 93:23 (July 6) 1929.

take place. At any rate, associated with general arteriosclerosis, eventually the development of a chronic nephritis is seen, and this is expressed under the heading 4.

This relatively simple clinical classification, as described, I have found to be a practical, easily applied and useful grouping of patients with Bright's disease. Almost every patient can be placed properly in the classification after relatively simple clinical study. Hence I commend it to you for use.

721 Huntington Avenue.

THE TREATMENT OF CHOREA BY THE INDUCTION OF FEVER

PRELIMINARY REPORT *

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March 4, 1929, a boy, aged 11 years, presenting an extremely severe attack of chorea, was brought to Bellevue Hospital. He was in constant violent motion, unable to speak or to help himself in any way. Phenobarbital was given as a sedative, one-half grain (0.03 Gm.) three times a day, with no effect, the chorea becoming more pronounced. March 15, a generalized rash appeared, at times resembling measles, at other times scarlatina. Moderate fever also developed. The diagnosis of phenobarbital poisoning was made but, through a misunderstanding, the drug was not permanently cut until the 28th of the month. During this period the boy had irregular fever, which went as high as 106.4 F. After a few days of pyrexia the chorea began to improve and continued to do so. On the 31st, there were only slight choreiform movements, speech was almost normal, and muscular strength was returning rapidly. By April 7 there was no chorea whatever. The improvement was rapid and striking. The type of drug intoxication shown by this boy appeared to be similar to that induced by phenyl-ethyl-hydantoin, a drug allied to phenobarbital. The boy recovered from the drug intoxication without complications and has been perfectly well ever since.

Since phenobarbital has been used before in many cases of chorea at Bellevue Hospital with no noticeable effect and with no toxic episode, the question was raised as to whether fever was the factor that caused the improvement in this case. The present investigation is based on the hypothesis that the fever is the effective factor in the treatment to be described. It is fully realized, however, that this point is not proved and that other, immunologic reactions may be operative. Support is lent to this hypothesis by the fact that fever is common both to intoxication with drugs (phenobarbital and phenyl-ethyl-hydantoin), which may have a beneficial effect on chorea, and to foreign protein therapy.

To investigate the question, typhoid vaccine was given to most of the patients having chorea who came to the Children's Medical Service at Bellevue Hospital during the rest of 1929 and part of 1930. This vaccine was chosen as a simple and safe means of producing fever. The object was to obtain fever for several days in succession. With plain typhoid vaccine, fever was not produced if the injections were given at intervals of less than five to seven days, and not every case responded with high fever. Possibly if larger doses of this vaccine had been given, sharp reactions would have occurred in more of the cases. However, enough cases showed marked improvement following a sharp febrile reaction to encourage a continuation of this line of treatment. Malaria treatment was considered but, because of the dangers from the malarial infection itself and the fact that only syphilitic malarial blood was available, this was not tried.

In the fall of 1930, typhoid-paratyphoid vaccine was tried. This vaccine, given intravenously, invariably produced a sharp febrile reaction, even when given daily. Up to the time of this report (May, 1931), twenty-four cases of chorea have been treated with intravenous injections of this vaccine. (For convenience it will be referred to as TAB.) The results have been sufficiently striking to justify a preliminary report. It is possible that some other more satisfactory way of producing fever will be found, but this method is simple, cheap and safe.

PROCEDURE

New York City Health Department typhoid-paratyphoid vaccine is given intravenously; it contains, per cubic centimeter, *B. typhosus*, 1,000 million; *B. paratyphosus* A, 750 million, and *B. paratyphosus* B, 750 million. The first dose has usually been 0.2 or 0.25 cc. This has always produced a sharp febrile reaction; in one case, 107 F. It is probably wiser to give even a smaller initial dose (0.1 cc.) to determine the individual's reaction to the treatment. Succeeding doses have been determined by the reaction to the first dose. For instance, if the temperature has risen to 105 or 106 F. with the first dose, the same amount has been given the next day. Usually a third dose of the same amount does not produce much fever. As much as 2.5 cc. has been given at a time, but not as an initial dose. The reaction begins about twenty minutes after the injection; there is a chill, the child becomes quite uncomfortable, and choreiform movements are increased. The temperature then starts to rise and reaches the peak in from two to four hours, remaining at that point for about an hour. The whole reaction is over and the temperature back to normal usually in from six to eight hours. If the temperature reaches 106, acetylsalicylic acid, 5 grains (0.3 Gm.), is given and an ice bag applied to the head. Occasionally the temperature is elevated the next day to about 102. When this happens, either no injection is given that day or the same dose is repeated. In some cases cyanosis occurs at the onset of the chill, but this passes off shortly. No untoward effects have been noted. After the chill the children have not been particularly uncomfortable, and some have been surprisingly little upset by the procedure.

The progress of the chorea has been used as a guide to the continuation of the treatment. Most cases have appeared to need a febrile period of about a week; others need more, depending chiefly on the severity and duration of the attack. Except for rest in bed and general nursing care, no other treatment for the chorea has been given. When possible the children have been kept in small rooms off the ward, but a number have been treated in cubicles in the ward with no attempt at special isolation and quiet. Codeine has been given in some cases for severe headache during the reaction. Acetylsalicylic acid is contraindicated, since it reduces the temperature. The injection is usually given in the afternoon, so that the child will not miss his dinner. The reaction is over in time for him to have an undisturbed night's sleep.

* This investigation is being conducted under a grant from the Josiah Macy, Jr., Foundation.
* From the Department of Pediatrics, New York University, and the Children's Medical Service, Bellevue Hospital.

The effect of the fever on the chorea is usually immediate. After the febrile reaction is over, the movements are markedly diminished. Further improvement is noted after each reaction. Most of the children have lost weight during the period of treatment and sometimes have seemed worn out after it. For this reason, they have been kept in bed for a week after the treatment was stopped in order that they might regain their strength before being allowed any activity. They have been kept in the hospital for another week of observation while up and about the ward. High caloric diets were given, with extra milk, cod liver oil, and iron tonics when indicated. A few have been given transfusions of whole blood for moderate secondary anemia. Such measures were designed to hasten convalescence. Occupational therapy was given and found to be very useful in keeping the children busy and happy. It is particularly helpful when there is incoordination due to muscular weakness, which often persists after the real chorea is over.

In order to have a comparison between this form of treatment and the course of chorea under various other forms of therapy as seen in the Children's Medical Service at Bellevue Hospital, sixty-three cases were reviewed, including some that received no treatment other than rest in bed. These cases were in no way selected but were taken in sequence from the years 1925, 1926, 1927 and 1929-1930. They do not constitute a true control series, since they occurred in different years, but do definitely show a marked difference in the duration of the disease before the present method of treatment was started.

The cases in both the treated and the untreated series were grouped according to severity, the following criteria being used. Because of the variability of symptoms in chorea, the classification is necessarily a rather loose one:

1. *Mild cases.* These show an occasional twitch of the extremities or the trunk, with no speech disturbance and no hypotonia. Some start mildly and become severe. Such cases are classified as severe. As a moderate or severe attack subsides, the choreiform movements become mild. Some are doubtless admitted to the hospital in this stage.

2. *Moderate cases.* In these cases there are frequent or constant gross choreiform movements of the extremities, trunk and face. There is some speech disturbance, and the child is unable to feed or dress himself because of the choreiform movements. This is the average case.

3. *Severe cases.* Hypotonia is the chief feature, causing a condition of pseudoparalysis. These children may be unable to speak, to sit up or even to make any attempt to perform voluntary acts. Violent choreiform movements occur when such an attempt is made. The hypotonia is an initial symptom. These children are very emotional and cry easily and wildly.

In the sixty-three cases not treated with typhoid paratyphoid vaccine, the average duration of the chorea after admission was: (1) in mild cases, including three uncured at discharge, 35 days (range, 10-65 days); (2) in moderate cases, including four uncured at discharge, 46 days (range, 19-120 days); (3) in severe cases, including one uncured at discharge, 67 days (range, 30-180 days). The average duration in the hospital of the sixty-three cases of chorea was forty-seven days.

In the twenty-four cases treated with typhoid paratyphoid vaccine, the average duration of the chorea from the day treatment was started was: (1) in mild cases, 7.7 days; (2) in moderate cases, 7.8 days, and (3) in severe cases, 14 days.

Case 24 was one of the early severe cases, and TAB was given at intervals of from one to six days, instead of daily, over a period of eighteen days. If this case is excluded, the average duration, after treatment was started in the severe cases, was eleven days. The average for the twenty-four treated cases was nine days; the average, excluding case 24, was 8.3 days. The treated cases were kept under observation for several days before treatment was started. Two of the early cases had been observed in the hospital twenty-five and twenty-three days, respectively, with no improvement, before being treated.

REPORT OF CASES

The following are brief descriptions of three typical cases:

Case 4.—A girl, aged 6 years, admitted to the hospital April 15, 1931, presenting a case of mild chorea, had had three previous attacks, one of which was very severe. (The diagnosis of the present attack was not definitely made in the clinic until the day of admission to the hospital.) Treatment was started, April 17, and daily injections were given for six days, with febrile response, 102-103 F. Improvement was noted immediately. On the eighth day she showed no sign of chorea and was allowed up on that day. She was discharged, May 6, to the country, without chorea and with her general condition much improved.

Case 11.—A boy, aged 9 years, was admitted to the hospital Feb. 14, 1931, in his first attack of moderately severe chorea. The onset had occurred two weeks before admission. Treatment was begun, February 16, and injections were given daily for five days, with febrile response, 102-106 F. Improvement was immediate and on the sixth day it was impossible to elicit any sign of chorea. He was discharged to the country, March 9.

Case 19.—A girl, aged 7 years, was admitted to the hospital Oct. 13, 1930, presenting her first attack of acute rheumatic polyarthritis. The fever and symptoms subsided promptly. October 27, choreiform movements of the hands and face were first noted. These progressed rapidly and, October 29, she had every evidence of a severe attack of chorea. Treatment was started on that day, and seven daily injections were given, with a febrile response of 101-104 F. Improvement was immediate and striking. On the tenth day she had no choreiform movements. She was given a transfusion, November 19, because of a hemoglobin content of 65 per cent, and was discharged, November 28, in excellent condition.

COMMENT

The evaluation of any method of treating a disease like chorea, which has several grades of severity, and which, when untreated, has such a variable duration, is very difficult. Many patients come to the hospital after weeks or months of illness. Others come within a week or two of the onset, and occasionally a case develops in the ward. It is well known that the average attack improves with rest and quiet and is over in from six to ten weeks, even without any other treatment. It is equally well known that the slight twitchings of a mild attack may persist for months. Sometimes an attack will continue in all its severity for a long period. Formerly, in the Children's Medical Service at Bellevue Hospital, the patients were isolated as well as possible, either by being put in small rooms off the ward or by screening in the ward. They were kept quiet in bed until all choreiform movements were gone. Various drugs and other methods of treatment, such as arsenic, calcium bromide, salicylates, thyroxine and cold packs, have been tried at different times without noticeable effect on the course of the disease. The ward seemed always cluttered with cases of chorea which would hang on for months. The present method of treatment has

changed this picture, so that now it is possible to expect the average patient to be ready for discharge in about three weeks after admission, unless discharge is delayed by other illness, by operation (tonsillectomy) or by some situation, such as waiting for a vacancy in a convalescent home.

A form of treatment that has thus far given such striking and prompt alleviation of symptoms, even in a small series of cases, seems worthy of serious consideration. This method has been used for too short a time to warrant any comment on the possible effect on recurrences or the development of heart disease.

It is interesting to compare the results of treatment of chorea by the injection of typhoid-paratyphoid vaccine with those obtained by intoxication with phenyl-ethyl-hydantoin, the only other form of therapy which has given good and fairly uniform results. This drug has not been tried in the Children's Medical Service at Bellevue Hospital, because our attention has been focused on the possibilities of the method presented here. A review of the literature suggests that the benefit from phenyl-ethyl-hydantoin lies largely in the fever produced.

According to Pilcher and Gerstenberger, in mild cases and in those in which there is no febrile response to the drug, the results are usually negligible. During the treatment with TAB there is a leukopenia followed by leukocytosis (foreign protein effect); during intoxication with phenyl-ethyl-hydantoin there is a leukopenia. This suggests that it is not a foreign protein reaction which is responsible for the benefit from TAB, except so far as it is responsible for the fever.

Possible advantages of TAB over phenyl-ethyl-hydantoin therapy would seem to be that: 1. The febrile reaction can be induced immediately without the necessity of waiting for a period up to two weeks for intoxication to develop. 2. All cases respond to TAB with a fever, whereas not all cases show intoxication with phenyl-ethyl-hydantoin, even when given over prolonged periods. 3. TAB has not caused complications, such as severe skin eruptions, agranulocytosis, bronchopneumonia and nephritis, which have been described with phenyl-ethyl-hydantoin. 4. By increasing the dose of TAB, or when giving it again several weeks after a course of injections, fever can always be produced. A second course of treatment with the drug, even when intoxication has been produced before, fails to produce the desired reaction. It is quite possible that fever is effective in chorea in a way similar to that which occurs in dementia paralytica treated with malaria. The exact mechanism, however, has not been proved. It is interesting to note that several investigators have reported success in treating cases of dementia paralytica with typhoid vaccine.

SUMMARY

Twenty-four cases of chorea have been treated with intravenous injections of typhoid-paratyphoid vaccine as a means of producing fever. The results thus far have been good. There has been prompt cessation of the symptoms, and the course of the disease in these patients has seemed to be greatly shortened. In the cases reported the average duration after treatment was started was from eight to nine days. This treatment has been much more satisfactory than any other used at Bellevue Hospital in the Children's Medical Service. It appears to have definite advantages over phenyl-ethyl-hydantoin.

168 East Seventy-Fourth Street.

AVITAMINOSIS

III. SPECIFIC EFFECT OF VITAMIN B ON GROWTH AND LIPID METABOLISM: LIPEMIA AS A SYMPTOM COMPLEX IN THIS AVITAMINOSIS *

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Heretofore it has been generally assumed, because of lack of convincing experimental evidence, that vitamin B produces growth entirely through its physiologic influence on stimulating the appetite and, conversely, it was postulated that all pathologic symptoms encountered in this avitaminosis are essentially those associated with inanition.[1] Recently, Sure and Walker [2] demonstrated that vitamin B, in addition to being an influencing factor in controlling the plane of nutrition, also exerts a specific effect on lactation, characterized by the growth and survival of nursing young, unrelated to food and water intake. We have now accumulated extensive data from numerous experiments substantiating our previous results on lactation and, in addition, have secured proof that vitamin B per se exerts an influence on the growth of the nonlactating albino rat. As little as 0.25 mg. daily of a highly concentrated vitamin B extract prepared by one of us (B. S.), introducing 0.125 mg. of solids, has exerted a specific effect on growth.

Since all vitamin B concentrates, as well as food products, contain an appreciable amount of minerals, it may be argued that the physiologic responses may be due to such elements as copper [3] and manganese,[4] which have recently been shown to play an essential rôle in nutrition. Such complicating factors have been eliminated entirely by feeding animals a vitamin B deficient diet containing autoclaved yeast, which furnished vitamin G, by feeding control litter mate animals the same diet fortified with the same amount of yeast untreated, which supplied vitamins B and G, and by restricting the daily food and water intake of the control animals to that consumed by the pathologic litter mates. The only limiting factor in the experimentation, then, was vitamin B, which had been removed by heat during the process of autoclaving.

Through the use of this technic, it has become evident that a deficiency of vitamin B per se produces a marked reduction in the glycogen content of the liver of the lactating mother, the nursing young and the nonlactating rat, and a lymphopenia and corresponding polymorphonuclear leukocytosis in weaned animals.[5]

For the past four years we have been searching for a symptom complex in vitamin B deficiency as may be evidenced by the blood chemistry picture. Our results, however, were, in the main, negative. We have considered of little clinical importance the anhydremia [6]

* Research Paper 202, journal series, University of Arkansas.
* From the Departments of Agricultural Chemistry and Home Economics, University of Arkansas College of Agriculture.

1. Drummond, J. C., and Marrian, G. F.: Biochem. J. **20**: 1029-1255, 1926.
2. Sure, Barnett; and Walker, D. J.: J. Biol. Chem. **91**: 69-75, 1931.
3. Hart, E. B.; Steenbock, Harry; Waddell, J., and Elvehjem, C. A.: J. Biol. Chem. **77**: 797-812 (May) 1928.
4. McCollum, E. V., and Orent, E.: J. Maryland Acad. Sc. **2**: 33-36, 1931.
5. Miss Dorothy J. Walker made the leukocyte counts.
6. Sure, Barnett; and Smith, Margaret E.: J. Biol. Chem. **82**: 307-315 (May) 1929.

and the increase in the non-sugar-reducing substances of the blood,[7] which were frequently encountered. We feel, however, that our present observations may serve as an aid to the diagnostician, since they indicate the presence of a marked lipemia, i. e., a large increase in the concentration of lecithins, fatty acids and the iodine number of the fatty acids, indicating unsaturation, in lactating mothers and nursing young and also in weaned animals, in this avitaminosis. Since there has been no definite yardstick by which to measure vitamin B deficiency from the standpoint of chemical analysis of the blood, as, for instance, the low phosphorus concentration in the case of rickets, it has been difficult to diagnose, positively, borderline cases of vitamin B deficiency as it exists in the United States; and it is hoped that a chemical study of the lipids of the blood will prove helpful to the clinician as a guide in vitamin B therapy, particularly in infant nutrition, in which anorexia is a common symptom complex.

This is a preliminary report. Our detailed data will appear in extenso elsewhere in the medical and biochemical literature.

7. Sure, Barnett; and Smith, Margaret E.: J. Biol. Chem. **84**: 727-740 (Nov.) 1929.

A CLINICAL STUDY OF ASCARIASIS *

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The effects of *Ascaris lumbricoides* on the human host are not known with any degree of accuracy. As infestation with *Ascaris* is widespread in tropical countries and in some parts of the United States and often represents a major sanitary problem, it was thought desirable to determine the clinical condition of a group of patients infested with this worm. An excellent opportunity for such an investigation was available in Tennessee as several thousand persons with *Ascaris* infestation were found in an investigation of the common human intestinal parasites.

That *Ascaris* may cause serious surgical conditions is not questioned. There are numerous reports from all parts of the world of intestinal obstruction due to the worms becoming matted together into a mass and blocking the small intestine. There are also records of the worms blocking the common bile duct or the pancreatic duct or invading the appendix. The adult worms are notoriously prone to migrate from one place to another, especially if there is an elevation of the body temperature, and it is not uncommon at such times for them to pass from the body through the anus, mouth or nose. Laryngeal obstruction caused by *Ascaris* during the course of diphtheria has also occurred. As a result of their power to penetrate various organs and tissues, ascarids have been found in surgical wounds, in hernia sacs, in abscesses of the peritoneal cavity and in subcutaneous abscesses of the abdominal wall. They have also appeared through colostomy openings. They have been known to perforate the intestine at the site of typhoid or tuberculous ulcerations. As a rule in instances such as we have described, a diagnosis of ascariasis is seldom made except at operation or autopsy and the resulting mortality is high. Clinical manifestations of this character have been summarized by Cram.[1]

Aside from the acute manifestations that may arise in cases of infestation with *Ascaris*, other nonsurgical conditions have been reported. In the tropics, physicians report various lung signs which are atypical and do not correspond to the signs of any common type of pneumonia. The larvae of *Ascaris* after escaping from the egg do not immediately develop to maturity in the intestinal tract but penetrate the intestinal mucosa, get into the blood stream or lymphatics and finally into the lung capillaries, from which they break out into the alveoli. It is possible that, during the migration through the lungs, various signs and symptoms may be produced. Severe pulmonary symptoms have occurred in experimental infections of man [2] and can easily be produced in guinea-pigs. If such conditions arise in naturally infected individuals, one would expect that they would be encountered clinically during the time of the year when infection with *Ascaris* is most likely to take place. In the United States this is from March through October. A study of the pathologic lesions of the lungs that occur in children as a result of *Ascaris* infection is in progress at the present time and will be reported in a later paper.

PLAN OF STUDY

In this study an attempt has been made to ascertain the signs and symptoms that are produced as a result of infestation under the usual conditions in a series of white and Negro children living in rural areas under economic and hygienic conditions in which infection and reinfection with *Ascaris* are occurring almost constantly. Control white and Negro children living under comparable sanitary and economic conditions but in areas of low ascaris prevalence were also studied. In this analysis 107 white and 60 Negro patients with 54 white and 69 Negro normal controls are included. The cases that were studied of *Ascaris* were distributed over the middle and upper Cumberland regions of Tennessee, in which areas the incidence of *Ascaris* in school children at the present time varies from 20 to 45 per cent. All of the cases studied showed ascaris eggs in the feces without significant infestation with other parasites. The normal controls did not have ascaris eggs in the feces and as far as could be determined had never been infested with *Ascaris*. The clinical histories and physical examinations were made by Dr. Horton Casparis and members of his staff in the Department of Pediatrics of the Vanderbilt University School of Medicine. Complete blood counts were made on all children. The differential leukocyte counts were made on 200 cells in each case.

ANALYSIS OF DATA

Sex Distribution.—In the cases and controls there were almost as many males as females included in this study. No significant differences were noted in the two sexes.

1. Cram, E. B.: Ascariasis in Preventive Medicine, Am. J. Trop. Med. **6**: 91-114 (Jan.) 1926.
2. Koino, S.: Experimental Infections on Human Body with Ascarids, Japan M. World **2**: 317-320 (Nov.) 1922.

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* From the Tennessee State Department of Public Health and the Department of Preventive Medicine and Public Health of Vanderbilt University School of Medicine.

* Dr. B. H. Nicholson; J. S. Crutcher, Jr., and J. C. Peterson assisted in this study. The county health officers of Clay, Jackson, Fentress, Overton, Rutherford, Williamson, Giles and Sumner counties extended their cooperation during this investigation.

* This work was carried on in cooperation with the project of the Department of Helminthology of the Johns Hopkins School of Hygiene and Public Health on the study of ascariasis in children. The study of ascariasis in children is under the auspices of the National Research Council and is financed by funds furnished by the American Child Health Association.

Age Distribution.—Table 1 shows the age distribution of the patients and the controls. Infestation with *Ascaris* is most commonly found in the groups of children of preschool and school age. Table 1 indicates that 63 per cent of the children studied were under the age of 10 years and 96 per cent were under 15.

Intensity of Infestation, or Worm Burden.—It is advisable to use the number of eggs per gram of formed feces as a basis for the determination of the intensity of infestation, as this method is more accurate than attempting to report the actual number of worms present. The approximate total number of *Ascaris* worms, however, can be computed by considering that there is 1 worm present for every 1,000 eggs per gram of feces. In the white patients there was an average of 50,000 eggs per gram of feces. In the Negro patients there was an average of 52,700 eggs per gram of feces. Table 2 shows the range of intensity of infestation for both white and Negro patients.

In analyzing this table, it can be seen that there is a wide variation in the intensity of infestation in these cases. Moderate to heavy infestations are found in a large percentage of both white and Negro patients. Differences in the clinical manifestations in light and heavy cases will be discussed later.

TABLE 1.—*Age Distribution, Cases and Controls*

Age Group, Years	White		Negro	
	Patients	Controls	Patients	Controls
0– 4	14	5	8	3
5– 9	54	45	28	27
10–14	34	4	20	38
15–20	5	0	4	1
Total	107	54	60	69

HISTORIES

The histories were obtained by the examining physicians in all cases and the information was secured from one of the parents of the child, from a guardian or from an older brother or a sister and, on the whole, they may be considered reliable. The family histories contained no significant features.

TABLE 2.—*Intensity of Infestation: Eggs per Gram*

Egg Count per Gram of Formed Feces	Number of White Patients	Number of Negro Patients	
1,000– 9,900	12	11	Light infestation
10,000– 29,900	36	22	Moderate infestation
30,000– 49,900	21	9	
50,000– 69,900	7	4	Heavy infestation
70,000– 89,900	11	4	
90,000–109,900	8	3	
110,000–129,900	5	0	Very heavy infestation
130,000 and over	7	7	
Average	50,000	52,700	

Table 3 gives the information obtained from the histories of the 167 patients and 123 controls.

Several interesting points are shown in the individual histories. Grinding of the teeth during sleep, a symptom which according to the older physicians and the public is almost pathognomonic of worm infestation, was found in 32 per cent of the white patients and only 11 per cent of the white controls, while 25 per cent of the Negro patients and 15 per cent of the Negro controls gave this history. Disturbed sleep or restlessness at night was found in 60 per cent of the white patients but in only 15 per cent of the white controls. Among the Negroes, 20 per cent of the patients had this complaint while 22 per cent of the controls had it. These observations would suggest that there may be some differences in the reaction on the part of the Negro race to the presence of ascarids in the small intestine. There is no basis for any relationship between grinding of the teeth and helminth infestation unless grinding of the teeth is associated with disturbed sleep.

One of the most common symptoms that was shown in this series was abdominal discomfort. The abdominal discomfort varied in intensity from slight nausea to definite cramplike pain, which was either generalized over the abdomen or localized to the region of the umbilicus. Seventy per cent of the white patients complained of abdominal discomfort, while only 7.4 per cent of the white controls had this complaint. Sixty per cent of the Negro patients and 30 per cent of the Negro controls complained of this symptom. Both abdominal discomfort and disturbed sleep were found more frequently in the white than in the Negro patients.

TABLE 3.—*Clinical History*

	White		Negro	
	Patients, Per Cent	Controls, Per Cent	Patients, Per Cent	Controls, Per Cent
Individual History Positive for:				
Frequent colds	37.0	39.0	27.0	20.0
Frequent cough	9.3	13.0	0.0	3.0
"Croup"	12.1	0.0	0.0	0.0
Wheezing	16.0	0.0	0.0	0.0
Pneumonia	1.9	16.6	5.0	5.6
Disturbed sleep	60.0	15.0	20.0	22.0
Grinding of teeth in sleep	32.0	11.0	25.0	16.0
Nose picking	30.0	24.0	40.0	17.4
Abdominal discomfort	70.0	7.4	60.0	30.0
Convulsions	6.5	0.0	12.0	4.3
Tiring easily	27.1	7.4	3.3	3.0
Appetite fair or poor	8.3	15.0	0.0	4.3
Constipation	9.3	7.4	3.3	1.0
Urticaria	0.0	4.0	0.0	0.0

The abdominal discomfort may be due to movements of the worms in the small intestine and perhaps to slight disturbances in digestion. No correlation between the worm burden and the abdominal symptoms could be demonstrated.

A history of convulsions was obtained infrequently. Histories of "worm spasm" were given in a few instances. It was not uncommon, however, to obtain a history of convulsions with high fever, abdominal pain and vomiting, which were relieved following the administration of an anthelmintic and the passing of worms from the bowel. Case reports of infestation with *Ascaris* with similar clinical symptoms without any other explanation appear frequently in the literature. It would seem from our observations and from those of others that these symptoms do occur in cases of ascariasis but it is not possible to state that there is any relationship between these symptoms and the presence of worms. Convulsions in children occur frequently, especially in association with various infections. The passage of worms from the body during these periods may be due to the migration of the worms as a result of the elevation of temperature. The passage of worms under these conditions would have no association with the symptoms present in the patient. A history of worms passing from the body without treatment was obtained frequently.

In one group of white patients, those living in the upper Cumberland region of the state, a history of croup or wheezing was obtained in 12 and 16 per cent

of the children, respectively. Special attention was given to these symptoms throughout the remainder of the study, but we were unable to confirm the earlier observations. Since no control cases were examined from this area, it is not possible to attach any significance to this finding.

No other symptoms were found that might be of any significance. The normal digestive functions and the appetite were not disturbed. A history of urticaria, one of the many causes of which is sensitivity to ascaris protein, was not obtained in any of our cases. The incidence of pneumonia in both the patients and the controls was low and is of no significance. The incidence of colds and cough varied in both the patients and the controls and is at about the level that one would expect for the general population. Nervousness is a symptom which is often reported in association with infestation with *Ascaris*. This was noted in about 5 per cent of the patients and from 10 to 15 per cent in the controls and therefore appears to be of no significance.

PHYSICAL OBSERVATIONS

The physical examinations on the two groups of cases revealed the conditions that one would expect to see in any group of rural children. The results in the control group did not differ materially from those in the patients. Table 4 shows in detail the common physical defects encountered. One might expect that children living under conditions such as are suitable for the transmission of *Ascaris* would have perhaps a larger number of defects than would be found in an average group.

A majority of the children in all groups were within normal weight limits. The number of underweight children was somewhat higher in the group of white patients than among the white controls but was slightly lower in the group of Negro patients than in the Negro controls. The Negroes in both groups had a higher percentage of underweight children than did the white persons. This conforms with the usual observations throughout the South.

Protuberance of the abdomen, or "pot belly," was noted in 60 per cent of the white patients and 33 per cent of the Negro patients, while among the white controls it was present in only 22 per cent and among the Negro controls in 23 per cent. Protuberance of the abdomen is a common condition in normal young children.

TABLE 4.—*Physical Observations*

	White		Negro	
	Patients, Per Cent	Controls, Per Cent	Patients, Per Cent	Controls, Per Cent
Normal weight	69.1	80.0	60.0	52.1
Underweight	30.1	20.0	36.6	41.0
Overweight	1.0	0.0	3.3	5.8
Diseased tonsils	61.6	72.2	51.6	50.0
Dental caries	38.3	50.0	10.0	34.7
Protuberant abdomen	60.0	22.2	33.3	23.3
Sinusitis	0.0	5.5	1.6	0.0
Nasal obstruction	9.3	0.0	0.0	12.0
Rickets	2.8	0.0	3.3	4.3
Poor posture	15.0	0.0	1.6	5.7
Mental deficiency	2.0	0.0	1.6	0.0

EXAMINATIONS OF THE BLOOD

Examination of the blood in each case consisted of a red and white blood cell count, a hemoglobin determination by the Sahli-Hellige method, and a differential leukocyte count of 200 cells. Table 5 gives the average observations on the blood for all groups examined.

The total number of red blood cells in both the patients and the controls was within the normal limits of variation for children. There was, however, considerable variation in individual red cell counts, the lowest for the white patients being 3,000,000 per cubic millimeter and the highest 6,700,000, while for the Negro patients the highest was 6,890,000 and the lowest 3,510,000 per cubic millimeter. The same range of variation was found in both control groups.

The same hemoglobinometer was used throughout the study and was calibrated against a blood of known hemoglobin concentration, which was determined by the Van Slyke oxygen method. The hemoglobin determinations are reported in terms of the number of grams of hemoglobin per hundred cubic centimeters of blood. When the average color index for each group is computed on this basis, it is found to fall within normal limits. In some of the cases there was a mild degree of anemia but it is not possible to say that this was due to the presence of *Ascaris*.

TABLE 5.—*Observations on the Blood of Patients and Controls*

Blood	White		Negro	
	Patients	Controls	Patients	Controls
Red blood cells per cubic millimeter	4,643,000	5,420,000	5,200,000	5,356,000
White blood cells per cubic millimeter	9,635	9,480	7,962	7,550
Hemoglobin, Gm. per 100 cc.	14.1	13.6	12.4	13.5
Color index	1.0	0.8	0.8	0.8
Percentage of polymorphonuclears	44.9	49.2	43.9	46.6
Percentage of polymorphonuclear basophils	0.9	0.2	0.3	0.2
Percentage of polymorphonuclear eosinophils	8.9	2.9	5.3	2.9
Percentage of lymphocytes	45.7	47.4	47.3	47.4
Percentage of monocytes	2.5	2.4	2.9	2.4

It has been shown by Schwartz [3] and others that extracts of *Ascaris lumbricoides* contain substances which destroy red blood cells. These hemolysins are firmly bound to the cells of the parasite, particularly to the cells of the intestinal tract. The hemolytic properties of this extract are present after fatty acids have been removed. Schwartz was able to show also that the body fluid of *Ascaris lumbricoides* was not hemolytic when it was tested soon after removal of the worm from the host. If the worm was kept alive in physiologic solution of sodium chloride for a few days, the body fluid became hemolytic. If the worm died, the hemolytic substances were greatly increased. These observations suggest that it is possible for this parasite to produce anemia under certain conditions, particularly if the worms die in the intestinal tract. Although severe cases of anemia that were said to result from *Ascaris* have been reported, the observations on the blood in the cases presented in this study do not indicate that anemia is an important clinical manifestation of ascariasis.

There was a marked variation in the total leukocyte counts in both the patients and the controls. The average count for the white patients was 9,635 per cubic millimeter and for the white controls 9,480. The average for the Negro patients was 7,962 and for the Negro controls it was 7,550. In the white patients the counts varied from 3,600 to 20,900, while in the white controls they varied from 4,300 to 17,600. In the Negro patients there was a variation from 2,138 to 14,450, and in the

3. Schwartz, Benjamin: Hemotoxins from Parasitic Worms, J. Agric. Research **22**, Nov. 19, 1921.

controls it varied from 2,550 to 13,550. Most of the high leukocyte counts were found in the young children, some of whom were frightened and struggled when the blood was drawn.

The average differential leukocyte counts were also within normal limits for children except in the case of eosinophils. The percentage of these cells varied from zero to 10.5 in the white controls and from zero to 9 in the Negro controls. The average for both control groups was 2.9 per cent, which is considered by Baagøe [4] to be within the normal variation for children. In the cases of *Ascaris*, however, the average percentage of eosinophils was considerably above normal. In the white patients the average was 8.9 per cent while in the Negro patients it was 5.3 per cent. Since the average intensity of infestation in the two races was practically identical, this difference between white children and Negroes is of interest. This suggests that parasitic infestation in Negroes may not stimulate the formation of eosinophilic leukocytes to the extent that it does in the white race.

There is a marked variation in the eosinophil count in individual white and Negro patients. In the white patients the percentages varied from zero to 28, while in the Negro patients the percentages varied from zero to 16. Sixteen per cent of the white patients and 31.6 per cent of the Negro patients had eosinophil counts that were within normal limits. For this reason, an eosinophil count within normal limits does not mean that the patient does not have *Ascaris*.

Table 6 has been arranged to point out that no correlation between intensity of infestation and eosinophilia can be shown to exist in the present series of cases. With two exceptions, the Negro patients in all intensity groups showed a lower eosinophilia.

There is no evidence from this study that there is any relationship between the age of the patient and the percentage of eosinophils present. Table 7 shows the average percentages of eosinophils by five year age periods.

The association of eosinophilia with intestinal parasites has been known since 1891, when Müller and Reider found an eosinophilia in the blood of a patient infested with hookworms. With infestations which are

TABLE 6.—*Intensity of Infestation and Eosinophilia*

Intensity Eggs per Gram Formed Feces	White		Negro	
	Number of Cases in Group	Average Percentage of Eosinophils	Number of Cases in Group	Average Percentage of Eosinophils
1,000– 9,900	12	8.3	11	4.3
10,000– 29,900	36	9.0	22	4.0
30,000– 49,900	21	8.8	9	5.1
50,000– 69,900	7	10.1	4	4.4
70,000– 89,900	11	6.7	4	7.2
90,000–109,930	8	9.2	3	7.1
110,000–129,900	5	8.2	0	0.0
130,000 and over	7	7.3	7	9.6

known to be associated constantly with the greatest degree of toxemia, namely, trichinosis and schistosomiasis, there is a definite eosinophilia in the early stages of the disease. It is well known that in cases of hypersensitiveness to foreign protein there may be an increase in the eosinophils. It is possible that the same explanation may hold true in the case of intestinal parasites.

It was shown by Faust and Meleney [5] in cases of Asiatic schistosomiasis that a high eosinophil count is not so uniformly present in late cases of that disease as in early ones. It may be that the host in time becomes less sensitive to the foreign protein of the parasite, and this may be true in other helminth infections as well. In the present study, however, it was not possible to determine the duration of infestation with *Ascaris*.

The degree of eosinophilia seen in cases of infestation with *Ascaris* may depend on the variation in the absorption of some other foreign substance. It was shown by Flury in 1912 that aldehydes are present in the tissues, body fluids and excreta of *Ascaris*. Borchardt [6]

TABLE 7.—*Average Percentage of Eosinophils by Five Year Age Periods*

Age Group	White		Negro	
	Number in Group	Average Percentage of Eosinophils	Number in Group	Average Percentage of Eosinophils
0– 4	14	7.1	8	4.0
5– 9	54	8.7	28	4.1
10–14	34	6.2	20	5.6
15–20	5	7.5	4	4.4

showed that it was possible to produce an eosinophilia by the injection of aliphatic aldehydes. In cases of *Ascaris* it is not known whether or not there is much absorption of foreign substances from the worm. If such a substance is absorbed, it is taken into the body, in all probability, in very small amounts and eosinophilia associated with *Ascaris* may depend in some degree on individual susceptibility.

SUMMARY

1. The clinical conditions found in 107 cases of ascariasis in white children and in 60 cases in Negro children, with 54 white controls and 69 Negro controls, were studied.

2. A history of disturbed sleep was obtained in 60 per cent of the cases in white children and in only 15 per cent of the white controls, while in only 20 per cent of the Negro patients and 22 per cent of the Negro controls was this complaint present.

3. Abdominal discomfort was present in 70 per cent of the white patients and in only 7.4 per cent of the white controls. It was present in 60 per cent of the Negro patients and 30 per cent of the Negro controls.

4. The physical conditions were those which can be demonstrated in any average group of rural children. Protuberance of the abdomen was present in 60 per cent of the white patients and in 22.2 per cent of the white controls. It was present in 33.3 per cent of the Negro patients and in 23.3 per cent of the Negro controls.

5. There were no significant changes in the total red blood cell counts, hemoglobin or total leukocyte counts in the cases and controls as groups.

6. The differential leukocyte counts revealed an average eosinophilia of 8.9 per cent for the white patients and 5.3 per cent for the Negro patients. Both white and Negro controls had eosinophil counts which varied from zero to 10.5 per cent. The average eosinophil count, however, for both control groups was 2.9 per cent, which is considered normal.

7. The eosinophilia does not appear constantly in cases of ascariasis, 16 per cent of the white patients and 31.6 per cent of the Negro patients showing an eosinophil count of 3 per cent or less.

4. Baagøe, K. H.: Eosinophil Cells in the Blood of Normal and Asthmatic Children, Am. J. Dis. Child. **35**: 171 (Feb.) 1928.

5. Faust, E. C., and Meleney, H. E.: Studies on Schistosomiasis Japonica, Am. J. Hyg., Monographic Series 3, 1924.

6. Borchardt, W.: Effects of Aliphatic Aldehydes on Increase in Eosinophil Cells, Klin. Wchnschr. **8**: 591-594 (March 26) 1929.

8. No definite correlation between eosinophilia and the intensity of infestation could be demonstrated.

9. No correlation between the age of the patient and eosinophilia could be shown.

CONCLUSIONS

This analysis presents few observations on which a clinical diagnosis of ascariasis may be based. The parasite causes abdominal discomfort and disturbed sleep. That the parasite causes some disturbance in the host is seen by the presence of eosinophilia. The negative clinical observations that are presented emphasize the importance of the routine examination of feces in a diagnosis of ascariasis.

MULTIPLE MYELOMA AND DIABETES INSIPIDUS *

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The association of defects in membranous bones, exophthalmos and diabetes insipidus was the subject of Christian's [1] contribution to the Osler festschrift in 1919. Therein he gave priority for the description of this unusual condition to Schüller,[2] whereas subsequent students of the subject have granted Hand [3] this distinction on the basis of reports made in 1893. A further American clinical record by Kay [4] anticipated Schüller; but to the latter and to Christian full credit is due for recalling the matter to the attention of the profession, after it had lain fallow for many years in the obscure mediums of Hand's and Kay's earlier communications. Up to September, 1929, Lyon and Marum [5] were able to collect only sixteen instances of this condition from the literature.

The unwieldly descriptive designation of this condition by Christian,[6] "defects in membranous bones, exophthalmos and diabetes insipidus—an unusual syndrome of dyspituitarism," was simplified by Schüller [7] to dysostosis hypophysaria. It is doubtful whether this term will survive since there appears to be a growing objection to the assumption that the pituitary body is primarily at fault in this condition. Hand [3] took this adverse position in 1921, as did Grosh and Stifel.[8] Demonstrable changes in the sella turcica have been established by the roentgenogram in only a minority of the reported cases. Then, too, Thompson, Keegan and Dunn [9] reported their clinical and necropsy observations on a patient with the characteristic syndrome, in whom the pituitary body had escaped but the cellular changes in the hypothalamus suggested an infectious background. On the other hand, the occasional occurrence of indubitable evidences of disturbed pituitary function in conjunction with this syndrome lends a measure of support to a pituitary responsibility. For example, Kyrklund [10] reported an instance of this condition in which dystrophia adiposogenitalis was apparent, and other signs of pituitary disturbance have been recorded in conjunction with the salient features of this syndrome.

The pathogenesis of this complex condition is still doubtful. Isolated reports of associated xanthomas and diabetes insipidus have been made by Pusey and Johnstone [11] and by Griffith.[12] In two recent communications, Rowland [13] has attempted to bring all such cases, together with the Schüller-Christian syndrome, Niemann's and Gaucher's disease, under the general heading of a visceral xanthomatosis involving the reticulo-endothelial system. He has pointed out the lipoid storage and lipoid hyperplasia common to all these conditions in the lungs, liver, lymph nodes, bone marrow, spleen and areolar tissue of the dura, periosteum, pleura and peritoneum.

Bony changes in the cranium of other orders than those described by Schüller and Christian have been reported as occurring in association with diabetes insipidus. Beck and McLean [14] reported a case with gross thickening of the bones of the skull, but without changes in the sella, in which the symptoms of polyuria and polydipsia were marked. The distribution of fat and hypertrichosis suggested a pituitary concomitant. Schoen [15] described a patient with osteitis deformans in whom diabetes insipidus constituted an important part of the picture. Heard, Schumacher and Gordon [16] and Sophian [17] have contributed clinical examples of the coincidence of osteitis fibrosa polycystica and diabetes insipidus. Bezançon and his co-workers [18] related an interesting experience in a patient with late syphilis manifesting evidences of diabetes insipidus in whom the roentgenogram revealed a hyperostosis extending backward and downward from the posterior clinoid processes without disturbance of the contour of the sella. Under antisyphilitic therapy a gumma of the tibia disappeared, but there was no change in the water metabolism or in the cranial hyperostosis. Lumbar puncture controlled the polyuria for a single day, and extract of the posterior lobe of the hypophysis effected decided improvement in the polydipsia and the polyuria as long as its administration was continued. Cranial metastases from remote malignant growths constitute a considerable

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3. Hand, A.: Defects of Membranous Bones, Exophthalmos and Polyuria in Childhood: Is It Dyspituitarism? Am. J. M. Sc. **162**: 509 (Oct.) 1921.

4. Kay, T. W.: Acquired Hydrocephalus with Atrophic Bone Changes, Exophthalmos and Polyuria, Pennsylvania M. J. **9**: 520 (April) 1906.

5. Lyon, E., and Marum, G.: Die Schüllersche Krankheit (Christian's Syndrome), Fortschr. a. d. Geb. d. Röntgenstrahlen **40**: 463 (Sept.) 1929.

6. Christian, H. A. (footnote 1): Defects in Membranous Bones, Exophthalmos and Diabetes Insipidus: An Unusual Syndrome of Dyspituitarism, M. Clin. North America **3**: 849 (Jan.) 1920.

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8. Grosh, L. C., and Stifel, J. L.: Defects in the Membranous Bones, Diabetes Insipidus and Exophthalmos, with Report of a Case, Arch. Int. Med. **31**: 76 (Jan.) 1923.

9. Thompson, C. Q.; Keegan, J. J., and Dunn, A. D.: Defects of Membranous Bones, Exophthalmos and Diabetes Insipidus, Arch. Int. Med. **36**: 650 (Nov.) 1925.

10. Kyrklund, R.: Beitrag zu einem seltenen Symptomenkomplex (Schädelerweichungen, Exophthalmus, Dystrophia adip. genit., Diabetes Insipidus), Ztschr. f. Kinderh. **41**: 56, 1926.

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12. Griffith, J. P. C.: A Case of Xanthoma Tuberosum, with Early Jaundice and with Diabetes Insipidus, Arch. Pediat. **39**: 297 (May) 1922.

13. Rowland, R. S.: Xanthomatosis and the Reticulo-Endothelial System, Arch. Int. Med. **42**: 611 (Nov.) 1928; Christian's Syndrome and Lipoid Cell Hyperplasias of the Reticulo-Endothelial System, Ann. Int. Med. **2**: 1277 (June) 1929.

14. Beck, H. G., and McLean, G.: Diabetes Insipidus Associated with Hypopituitarism and Structural Changes in the Skull, Showing the Effect of Hypophyseal Extract on the Excretion of Urine, Therap. Gaz. **43**: 158 (March) 1919.

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17. Sophian, Abraham: Diabetes Insipidus and Osteitis Fibrosa Polycystica, J. A. M. A. **95**: 483 (Aug. 16) 1930.

18. Bezançon, F.; de Gennes, L.; Célice, and Delarue, J.: Diabète insipide et formation osseuse de la base du crâne, Bull. et mém. Soc. méd. d. hôp. de Paris (5-6): 588 (April 14) 1930.

group of cases with associated diabetes insipidus. Cross,[19] for example, reported a case of diabetes insipidus showing bone destruction in the skull without new bone formation in which a tumor of the breast had been removed ten years previously. The assumption that this tumor was malignant, with late metastases to the skull, seemed justified, although Fink [20] in a comprehensive analysis of necropsy observations in diabetes

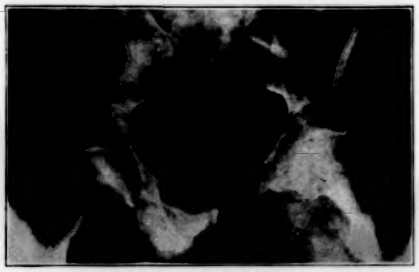

Fig. 1.—Appearance of pelvis, showing extreme rarefaction of iliac and ischiatic portions.

insipidus concluded that when polyuria occurred in the presence of a malignant condition it was almost pathognomonic of metastasis to the posterior lobe of the pituitary body. In passing it may be added, however, that cases such as that of Futcher [21] may be found in the literature in which the pituitary body escaped involvement. In this instance the hypothalamus was the seat of a metastasis from a hypernephroma of the kidney, and clinically the patient had suffered from diabetes insipidus.

The following case is presented because of the coincidence of gross pathologic changes in the bones and diabetes insipidus:

REPORT OF CASE

A white farmer, aged 51, was admitted to the Wisconsin General Hospital complaining of weakness and anorexia. The first intimation of ill health appeared a year previously in a marked frequency of urination. He voided urine about every half hour, and during the night from six to eight times. As measured by the patient the total quantity of urine voided in a day reached as high as 3½ gallons (13.2 liters). It was usually pale to dark yellow. Occasionally there was some burning on urination. Sharp pains developed in the back, making stooping rather painful. In a year's time there had been a loss in weight of 44 pounds (20 Kg.). Increasing weakness accompanied this loss. For two months the appetite had been very poor. Constipation was rather obstinate. Pains across the upper anterior part of the chest and the frontal region of the skull were present almost daily for several months prior to admission. These pains usually began at 10 a. m. and lasted at times through the night. Apparently the polyuria was somewhat less marked immediately before he entered the hospital.

The inventory by systems added only disability in the right hip, which was attributed by the patient to a trauma twenty years earlier in life. Arthritic pains in the right shoulder lasting one week were noted ten or twelve years before. At the age of 9 the patient fell into a 9 foot ditch and sustained an injury to the lower lumbar vertebrae. Aside from pain and stiffness for a few years no sequelae were remarked until he started to do laborious work at 14 or 15. Since that time he had experienced an occasional "catch in the back." No further pertinent facts could be gleaned from the past medical history.

The pertinent physical signs may be listed as follows: emaciation, the unsteady gait of weakness, carious teeth, enlarged anterior cervical lymph nodes, extreme tenderness bilaterally over the lower two or three ribs from the midaxillary to the posterior axillary lines, thickening of accessible arteries, tenderness and increased muscular resistance over the entire upper part of the abdomen, most marked in the right hypochondrium, left cervical and upper dorsal scoliosis and pain on all movements of the right hip.

Urinalysis showed: specific gravity, 1.009; an acid reaction; albumin, pus cells and a few hyaline and granular casts. On subsequent examinations before the administration of solution of pituitary the specific gravity did not exceed 1.005, no casts were found, and on one occasion Bence-Jones protein was determined. The blood count was significant in the leukocytosis of 20,500 with 84.8 per cent neutrophils and 0.3 per cent neutrophilic myelocytes. Later counts showed from 9,000 to 10,000 leukocytes with normal differential distributions. The Wassermann reaction of the blood was negative and the blood dextrose and nonprotein nitrogen were within normal range. Two phenolsulphonphthalein tests showed a 43 and 48 per cent output, respectively, in two hour collections. The Mosenthal renal test diet elicited the following interesting results:

Time	10 a.m.	12 noon	2 p.m.	4 p.m.	6 p.m.	8 p.m.	8 p.m. to 8 a.m.
Volume (cc.)	545	235	455	40	230	330	1770
Specific gravity	1.005	1.004	1.005	1.004	1.004	1.004	1.005

The roentgenologic studies of the bones were most illuminating. The skull showed a rather deep sella with some irregularity in the posterior clinoid processes and a tendency to bridge the sella itself. The ribs, vertebrae, heads and upper

Fig. 2.—Extreme rarefaction of lower thoracic and lumbar vertebrae, together with motheaten appearance of lower ribs.

portions of the shafts of the femurs and the pelvic bones, especially the pubis and ischium, showed extensive destruction without proliferation, lending a peculiar motheaten appearance to these bony structures (figs. 1 and 2).

Blood calcium determinations were made in view of these roentgenologic indications; the figures ranged from 16.3 to 17.3 mg. per hundred cubic centimeters of blood. Furthermore,

19. Cross, E. S.: Clinical Study of a Patient Suffering from Intense Thirst and Polyuria (Diabetes Insipidus) and Presenting X-Ray Evidence of Malignant Processes in the Cranial Bones, Possibly Late Metastases of Mammary Carcinoma, Endocrinology **6**: 387 (May) 1922.

20. Fink, E. B.: Diabetes Insipidus: A Clinical Review and Analysis of Necropsy Reports, Arch. Path. **6**: 102 (July) 1928.

21. Futcher, T. B.: Diabetes Insipidus and Lesions of the Mid-Brain: Report of a Case Due to a Metastatic Tumor of the Hypothalamus, Am. J. M. Sc. **178**: 837 (Dec.) 1929.

roentgenologic studies of the chest and the gastro-intestinal tract established no abnormality. It should likewise be noted that the condition of the prostate was within normal range.

The course during the hospital stay of twenty-eight days was marked by the virtual constancy of distress or actual pain in the back. At no time were there demonstrable bony tumors or deformities. Exquisite tenderness, however, was present over the spinous processes of the lumbar vertebrae and later over the thoracic vertebrae. A maximum intake of 6,080 cc. of fluids was reduced to 1,600 cc., and an output of 4,900 cc. of urine to 1,800 cc., under the intranasal administration of 2 cc. of solution of pituitary daily. This effect was inconstant, and as a rule a negative water balance persisted in spite of this reduction of the two component factors. However, the specific gravity of the urine was 1.009 the day before discharge, one of the occasional days when the intake of fluids exceeded the output.

COMMENT

From these observations a conclusion of multiple myeloma with associated diabetes insipidus was derived. Of particular significance were the possible changes in bony structures about the sella. A review of the literature reveals no similar coincidence of clinical manifestations. Branham and Lewis [22] and Berkheiser [23] reported in detail cases of multiple myeloma with involvement of the cranial bones and exophthalmos. Then, too, the literature contains references to multiple myeloma involving the cranial bones without exophthalmos or diabetes insipidus.[24] However, no instance of concurrent multiple myeloma and diabetes insipidus was encountered.

While in the reported case the cranial vault appeared free from involvement by the myeloma and there seemed to be some local changes about the sella, it must be admitted that such deviations from the normal occur commonly without symptoms referable to disturbed pituitary function. It is beside the point to enter on a detailed discussion of the merits of the various positions held relative to the purely pituitary and the so-called neighborhood symptoms; but with regard to the water function, since the fundamental observations of Camus and Roussy [25] the evidence in favor of an extrapituitary control of this function has been strengthened by the experimental work of Bailey and Bremer [26] and such clinicopathologic studies as those of Urechia and Elekes.[27] The hypothalamus and the tuber cinereum would appear from such observations to be more important than the pituitary body in the control of the water balance. Cajal [28] has demonstrated nerve fibers in the infundibulum which Cushing [29] traced through the stalk from the hypothalamus to the posterior lobe of the pituitary body. In view of this anatomic relationship, Fink [20] has hypothesized that the water balance may be maintained through a linking between the kidneys with their autonomic nerves and the vegetative centers, probably in the tuber cinereum and a final component in the pituitary hormone.

Whatever the interrelationship between the bony lesions, several types of which are described in the literature, and the disturbance in water metabolism, a further example is added in the case of multiple myeloma with associated diabetes insipidus.

22. Branham, V. C., and Lewis, N. D. C.: A Case of Multiple Myeloma with Unusual Features, M. Rec. **99**: 169 (Jan. 29) 1921.
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SIGNIFICANT HEMORRHAGIC RETINAL LESIONS IN BACTERIAL ENDOCARDITIS (ROTH'S SPOTS)*

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The proper interpretation of the ophthalmoscopic picture is often of invaluable assistance in the diagnosis of systemic disease. Lesions occurring in the fundus are always of significance and many times diagnostic but it is not sufficient simply to describe the lesion in terms of pathologic anatomy. The careful observer should make every attempt to interpret its clinical significance.

During the past four years we have studied in the wards of the Fourth Medical Division, Bellevue Hospital, and in the wards and laboratories of the Newark City Hospital, the eyeground lesions occurring in bacterial endocarditis, particularly the subacute form. The significance of a rather characteristic fundus lesion was apparently not known to most of our colleagues, ophthalmologists and clinicians. We were able to find a few excellent descriptions in the early literature.

Subacute bacterial endocarditis is a disease of unusual interest to the physician because of the variety of constitutional symptoms and changes which it presents. Early recognition is often difficult even to those familiar with its manifestations, and one must then search closely for the remarkable phenomena which may give a clue to correct diagnosis.

The embolic phenomena in subacute bacterial endocarditis, those resulting from pieces of the vegetations or, perhaps, from clumps of the bacteria themselves lodging within vessels in the viscera, skin or mucous membranes, are particularly important in the differential diagnosis. The finding of the retinal lesion is of considerable value when the cutaneous petechiae are few or not distinctive because of the presence of other varieties of skin lesions, or if the disease occurs in a Negro patient.

The daily examination of the fundus may at any time reward the persistent observer with a retinal lesion which often makes its appearance between examinations and may be quite transitory, often completely vanishing within a few days. We have encountered a variety of retinal lesions in this disease but the one that we consider as particularly pathognomonic is that which we have termed a "canoe-shaped" linear hemorrhagic spot with a light central area (fig. 1) appearing most often from 1 to 2 disk diameters away from the nerve head but at times only in the periphery. The lesion appears in the most superficial portion of the nerve fiber layer; its shape is dependent on the arrangement of the fibers of this layer, the long axis

* From the Fourth Medical Division, Bellevue Hospital, Dr. Alexander Lambert, director.

of the hemorrhage coinciding with the direction of the emerging fibers. We have also observed round, elliptic or flame-shaped hemorrhagic spots without light centers, but such lesions may occur in a variety of diseases. We therefore have hesitated to stress their significance for the recognition of this disease. They

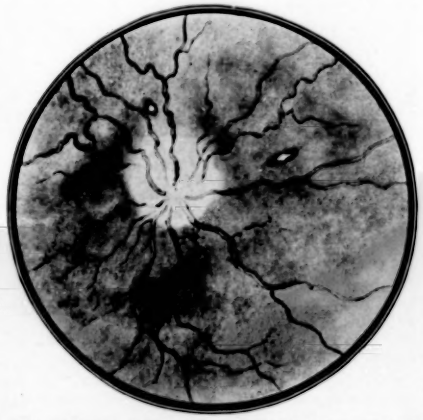

Fig. 1.—Subacute bacterial endocarditis: The left eye shows the characteristic "canoe shaped" linear hemorrhages with elliptic light centers. There is blurring of the disk margin.

do, however, have in common with the other typical lesion the faculty of appearing suddenly and vanishing without any trace of their former presence. We have found the simple hemorrhagic lesions without white centers in patients with severe anemias, leukemias, malaria and hemorrhagic retinitis due to vascular disease or hypertension. Although such hemorrhages are of distinct pathologic significance, still they are not outspokenly pathognomonic for any single or small group of diseases.

Here again, as in nearly every phase of medical interpretation, one can never say with absolute assurance in every case that any one lesion is always diagnostic. It is essential that one evaluate the observations in connection with the rest of the picture, for otherwise errors are liable to result. The ophthalmologist who is thoroughly familiar with this characteristic fundus lesion can venture to make the diagnosis of subacute bacterial endocarditis from his observations alone.

After making the observation described, we became interested in studying the eyegrounds in a great variety of diseases and found that certain cases of pernicious anemia offered the only confusing picture. In this condition, nearly identical elliptic hemorrhages with light centers are at times encountered (fig. 2) and when the disease in the anemic patient runs a febrile course, as we have often seen, with splenomegaly, often with mucous membrane hemorrhages and with a cardiac murmur, the differentiation from subacute bacterial endocarditis is difficult on the first examination. We have seen cases in which the best minds were mistaken in the first attempt. Usually under these conditions the blood study quickly decides, for in the patients with the eyeground lesions we have found a severe degree of anemia with the characteristic blood picture, showing large cell anisocytosis.[1] Occasionally we have had to await reports of blood cultures [1] or even the results of a therapeutic test with the liver diet before we were completely assured of the differentiation.

We have also seen similar retinal lesions in a patient who had a fever of unexplained origin and who, in our opinion, was suffering from subacute bacterial endocarditis. The complete absence at all times of clinical evidence of organic valvular lesion should have made us more cautious. The autopsy revealed a normal heart. Then, retrospectively, we noted that the lesions appeared directly after a transfusion which was accompanied by a severe constitutional reaction and we therefore assumed that, probably because of faulty blood matching, agglutination of the intravascular blood cells had taken place and was responsible for the embolic ocular phenomena.

In acute bacterial endocarditis we have encountered a similar lesion but in these cases it occurred in greater numbers and apparently was a late manifestation. The cases were due to a variety of causative organisms such as the meningococcus, pneumococcus and hemolytic streptococcus. In the two patients suffering from pneumococcus and *Streptococcus hemolyticus* endocarditis, the ocular sign was particularly helpful in diagnosis, since, on admission, the patients were extremely ill, with but insignificant cardiac murmurs. The fundus picture was characterized by edema of the retina with multiple discrete lesions appearing either as punctate elliptic hemorrhages with light centers, elliptic hemorrhages alone or simply white spots. The significance of the changes in the eyeground was at first not always appreciated, but in each instance the postmortem revealed vegetative valvular lesions. We

Fig. 2.—Pernicious anemia: Appearance of right fundus showing elliptic hemorrhages with small light centers. (Photographed with Nordensen camera by Dr. W. H. Hahn, Newark, N. J.)

recognized the resemblance of these lesions to those we had previously been finding in our patients with subacute bacterial endocarditis. We considered them as embolic phenomena from an endocardial vegetation.

1. Libman, E.: New York Academy of Medicine Lectures on Medicine and Surgery, New York, Paul B. Hoeber, Inc. (first series), 1927, p. 82.

Although these retinal lesions have long been known as "Roth's spots," [2] Roth's [3] description in 1872 by no means conveys any idea of their real significance. They were included in a series of retinal changes associated with a great variety of constitutional diseases among which there are a few cases with clinical observations and retinal changes which suggest that Roth may have been dealing with a lesion similar to the one in which

Fig. 3.—Subacute bacterial endocarditis: The area, seen under high power, is entirely free of cellular infiltration, appearing as a homogeneous mass resembling coagulated albuminous substance. Ophthalmoscopically, this area would appear as a superficial white spot.

we have been particularly interested. His case 5 is evidently one of general infection with multiple systemic and pulmonary abscesses, a purulent arthritis of the knees seeming to have been the original focus or perhaps an osteomyelitis. One gathers that there were purulent and hemorrhagic foci in the retina, to which he refers as follows: "In case 5 we have before us a mixed septic and embolic process, putrefication of the lesions in the lower extremities associated with multiple metastatic purulent foci. . . . We may therefore more closely associate the present retinitis with the systemic process and from an etiologic point of view we can speak of septic retinitis as we do of leukemic or albuminuric retinitis." These are the only references in his voluminous article that would suggest the nature of the lesion to which his name has been associated. To be sure, even as late as 1885 [4] the differentiation of subacute from acute bacterial endocarditis had not been accomplished, so in the separation of one of these conditions it is conceivable that similar retinal lesions in both diseases, acute and subacute, carried along the old designation for both.

In 1902, Litten [5] described the retinal lesion as accurately as we can at the present time: "Round or elongated white foci occurring close to the nerve head . . . single or multiple and occasionally surrounded by a hemorrhagic ring." Ophthalmoscopically, they were usually separated by normal retinal tissue. They were described as coming to complete development in between thirty and sixty minutes. The hemorrhages were characterized as being small, round, slow in developing, at times showing linear arrangements, and again appearing to encircle the white spots. The author studied two series of cases and after his second series modified his original views considerably, correcting and amplifying some earlier mistakes and observations. After his later work he came to the following conclusions:

1. The changes described in the fundus were observed in 30 to 40 per cent of the cases; they occurred frequently in mild and severe cases of septicemia and malignant endocarditis.

2. Patients with these retinal changes may survive; the white spots and hemorrhages may disappear and therefore these retinal changes are of little prognostic value.

3. The ocular changes may occur in cases where the disease is protracted for a period of more than six months and the white spots may disappear and reappear as often as three times in the course of the disease.

In these cases he undoubtedly included, unknowingly at the time, patients with subacute bacterial endocarditis.

4. The retinal changes described are of considerable diagnostic value in acute septic systemic diseases and malignant endocarditis.

Histologically, Litten described the white spots as limited entirely to the nerve fiber layer, never rupturing

Fig. 4.—Acute bacterial endocarditis: There is a localized swelling of the nerve fiber layer, which is enlarged at this area to about three times its normal thickness. The superficial portion is occupied by an area of extravasated blood around which there is localized edema of the nerve fiber layer. Ophthalmoscopically, the edematous area formed the white element in the hemorrhagic lesion. (Pathologic material obtained in the laboratory of Newark City Hospital.)

into the other layers and appearing as homogeneous, structureless, hyalin-like material barely suggesting the striation of the nerve fiber layer and containing nuclear detritus from this layer (fig. 3). He found no embolic vascular occlusion. He considered the process as one of

2. Libman, E.: M. Clin. North America **2**: 117-151 (July) 1918.
3. von Roth, M.: Virchows Arch. f. Path. Anat. **55**: 197-217; 517-518, 1872.
4. Osler, W.: Gulstonian Lectures, Lancet number 3210, 1885, p. 415.
5. Litten, M.: Deutsche med. Wchnschr. **28**: 37, 1902.

"exudative coagulation" and not of embolism. He also reported similar retinal changes in chronic systemic diseases such as "Bright's disease," pernicious anemia, leukemia, diabetes and scurvy, but could not conceive how such a variety of causes resulted in similar lesions.

In 1919, Dellmann [6] described retinal metastases in a case of subacute bacterial endocarditis due to *Streptococcus viridans*. During the course of the disease, while the blood culture was positive, he found hemorrhagic spots with white centers in the left eye. The right eye remained normal but in the left eye several round gray inflammatory foci simulating tubercles developed. Histologically, the hemorrhages were found to originate mainly in the nerve fiber layer and the inner nuclear layer, with some invasion of the deeper layers. There was edema of the nerve fiber layer with hyperemia. Occasionally Dellmann saw small flat hemorrhages with a small central lymphocytic infiltration. Areas of similar infiltration were also found, independent of any vessel or of hemorrhage. They were so small that they never protruded beyond the granular layer. Large hemorrhagic lesions, however, ruptured the retinal coats.

Fig. 5.—Acute bacterial endocarditis: Appearance of the field in figure 4 seen under high power. The superficial portion is occupied by an area of extravasated blood showing disintegrated red cells and phagocytosed blood pigment. The edematous area below contains a scanty infiltration of lymphocytes and polymorphonuclear cells.

In the right eye a small number of hemorrhages were found in the periphery, none close to the papilla. An important observation was the finding of a bacillary plug within one of the capillaries. Dellmann felt that the small inflammatory foci described in the lesion in the left eye were probably due to emboli and not simply to a local reaction on the part of the retina. He concluded that septic embolic retinitis and suppurative metastatic ophthalmia are basically inseparable, the differences being only those in gradation.

6. Dellmann, F.: Klin. Monatsbl. f. Augenh. **63**: 661, 1919.

Falconer [7] was familiar with hemorrhagic retinal lesions and observed them in four of his five patients with subacute bacterial endocarditis. He stresses the importance of repeated examination of the fundus because of the rapid appearance and disappearance of the lesion. He considered optic neuritis of equal significance with the hemorrhages for the diagnosis of this disease. This author quotes many other observers who have noted the occurrence of retinal hemorrhages and white spots in "malignant endocarditis."

Krückmann [8] described the pathologic changes in the eyes of four patients who died with subacute bacterial endocarditis. He believed that the white areas consisted of necrotic nerve structures and glial cells with fatty degeneration. There was never any diffuse retinal leukocytic infiltration such as he observed in cases of puerperal sepsis. He thought that the hemorrhages appeared first, occurring immediately by diapedesis following vascular endothelial injury, although he could never demonstrate this injury histologically. He concludes that the lesions undoubtedly result from tiny clumps or single bacteria deposited in the retina during the time of bacteremia.

In a series of twenty-five patients suffering from subacute bacterial endocarditis, whom we have observed through their entire illness at the hospital, eleven presented eyeground lesions at some time during the course of the disease. In one of the patients the finding of the retinal lesion was particularly helpful in making a rather difficult differential diagnosis. This case was originally diagnosed as syphilitic aortitis with insufficiency, but a careful search of the retina was rewarded with the finding of a few characteristic lesions which were seemingly the only manifestation of embolism.

Fig. 6.—Acute bacterial endocarditis: The retinal layers are separated by a localized cellular infiltration containing lymphocytes and a large number of polymorphonuclear cells. The lesion ends abruptly at the pigment epithelial layer and does not invade the choroid. Ophthalmoscopically, this area appears as a dense white spot.

7. Falconer, A. W.: Quart. J. Med. **8**: 106-114, 1900-1910.
8. Krückmann, E.: Virchows Arch. f. Path. **287**: 227-233, 1930.

The diagnosis of subacute bacterial endocarditis involving the aortic cusps was confirmed at autopsy. In another patient, in whose case there was a difference of opinion between pernicious anemia and subacute bacterial endocarditis, the retinal lesions were of a somewhat different character, occurring as round, white spots such as have been suggested as typical of embolism.[9] In our pathologic specimen we have found its counterpart in an edematous swelling in the nerve fiber layer without evidence of vascular disease (fig. 3).

In the remaining patients the finding of the retinal lesions was only of confirmatory value in diagnosis,[10] there being present numerous other, apparently earlier evidences of embolism. We made early studies of the fundus in nearly all the cases. In over half of the patients the lesion was first noticed shortly before death, even though the duration of the illness in some of the cases was a prolonged one. However, in several instances the characteristic lesions appeared during the entire course of the disease, new crops being found from time to time, while the older ones faded and completely disappeared.

Subacute Bacterial Endocarditis

Patient	Retinal Hemorrhage: White Center	Retinal Hemorrhage: No White Center	Eye	Occurrence of Hemorrhage Before Death	Time in Hospital	Blood Culture	Cutaneous Petechiae	Diagnostic Value of Hemorrhage
W. C.	All	.....	Both	2 days	13 days	Neg.	None	Important
A. S.	(Round white spots—no hemorrhage)	.....	Right	2 weeks	6 mo.	Pos.	None	Important
R. S.	Numerous "crops"	.....	Both	5 months	6 mo.	Pos.	Many	Incidental
M. A.	Numerous	.....	Both	6 weeks	2½ mo.	Pos.	Many	Incidental
C. H.	.....	One	Left	1 day	2½ mo.	Pos.	None (col. pt.)	None
G. M.	Nearly all	.....	Left	11 days	11 days	Pos.	Many	Confirmatory
S. M.	One	.....	Left	4 days	14 days	Pos.	Many	Incidental
A. F.	.....	One	Right	6 days	3 mo.	Pos.	Few	None
N. M.	.....	Two	Right	1 day	1½ mo.	Pos.	Few	None
R. S.	.....	Many	Left	1 month	1 mo.	Neg. (Valve crush. pos.)	Many	Confirmatory

During the time when the fundus lesions were present, the anemia was never profound in any of the patients. The red cells ranged from 1,900,000 to 4,500,000 per cubic millimeter, with an average of 3,300,000; the hemoglobin, from 50 to 78 per cent; the average was 63 per cent. We did not attribute the changes in the eyeground in any case to the anemia.[9]

There were four patients in whom the lesions were found only in the left eye; in two they were described only in the right, and in four they appeared in both eyes. This observation varies from that in embolism to the central artery of the retina in cases in which there is predominant involvement of the left eye. The lesions were usually found either close to the nerve head or within from 2 to 2.5 disk diameters from its margin. In six of the patients all of the lesions, or most of them had white centers (table); in a few, all of the hemorrhagic lesions were without white centers. Only two patients had negative blood cultures, one of them being the patient first described. The other, although his blood culture was repeatedly negative, showed numerous streptococci in the crushings of the valvular vegetation, this giving evidence that his disease was still in the active bacterial stage. The aortic and mitral valves were involved in this group with equal frequency. All of the remaining patients, except one, had nonhemolytic streptococci in the blood stream during life. In the exceptional case, the blood culture revealed a meningococcus but the course of the condition and its clinical appearance fitted in more with subacute bacterial endocarditis. The eyeground lesions showed, characteristically, elliptic hemorrhages with white centers.

We were fortunate in obtaining pathologic material from the retina in three cases which during the patient's life were diagnosed as subacute bacterial endocarditis, acute bacterial endocarditis and pernicious anemia; all these cases showed immediately before death one or more of the lesions that we have described. In the case of subacute bacterial endocarditis the only lesions that we could discover after complete section of the posterior half of both eyes were localized nodular swellings of the nerve fiber layer. These areas were entirely free from cellular infiltration; the lesion appeared as a homogeneous mass, simulating coagulated albuminous material (fig. 3). The choroidal coat showed a scanty diffuse lymphocytic infiltration. Hemorrhagic areas were not encountered in any of the microscopic sections prepared from our specimen. In the case of severe pernicious anemia, complete sections of both eyes failed to reveal any demonstrable lesion such as had been seen during life.

In the specimen from the case of acute bacterial endocarditis, the involvement of the retina was much more extensive and there were various types of lesions. They fitted in with the variety of changes as seen ophthalmoscopically. The entire retina was moderately edematous with a scanty polymorphonuclear infiltration of the nerve fiber layer. The nuclear layers were free of involvement; the retinal vessels were distended with red blood cells and showed no evidence of disease or of occlusion. The choroid was relatively free of disease, containing only an occasional focal lymphocytic infiltration. In addition, there were localized lesions of the nerve fiber and ganglion layers. One type of lesion showed an area of extravasated blood characterized by the presence of disintegrated red cells and phagocytosed pigment. Beneath the area of hemorrhage, the nerve fiber layer was markedly edematous with a scanty cellular infiltration of lymphocytes and polymorphonuclear neutrophils (fig. 4). Another characteristic lesion appeared as a localized nodular infiltration separating the retinal layers and containing polymorphonuclear cells (fig. 6). This lesion terminated abruptly at the pigment epithelial layer and did not invade the choroid. There was no increase in the thickness of the retina at this point. A similar lesion in other areas was associated with considerable edema of the nerve fiber layer producing an increase in the thickness of the retina.

Probably one of the most interesting observations in this group of cases is the fact that the lesion is limited almost wholly to the most superficial layers of the retina, the choroid showing practically no involvement. This would suggest that the factor producing the ophthalmoscopic picture is carried through the central artery of the retina. This condition is distinct from septic and metastatic choroiditis. In the latter, the choroid coat is primarily involved with secondary degeneration of the retinal elements. Since the manifestations of this disease are to a large extent embolic in

9. Yater, W. M., and Wagener, H. P.: Am. J. M. Sc. **178**: 105-115 (July) 1929.

10. Moore, R. F.: Medical Ophthalmology, ed. 2, Philadelphia, P. Blakiston's Son & Company, 1925, pp. 252-255.

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nature, one would certainly expect to find occlusion of the central artery of the retina or of one of its branches.[11] If the emboli were to lodge in the ciliary vessels, an edematous retina with secondary permanent pigmentary changes would be seen.

Because of the superficial situation of the hemorrhages, one would also expect subhyaloid distribution to be occasionally encountered. We failed to find any of these changes in the twenty-five patients having subacute bacterial endocarditis examined ophthalmoscopically at frequent intervals. We would suggest to the ophthalmologist that the discovery of vascular embolic lesions in the fundus should call to mind the possibility of this interesting systemic disease. He is more apt to be the first to see this type of lesion, since such patients often seek medical advice because of the sudden onset of serious disturbances of vision.

SUMMARY AND CONCLUSIONS

1. The characteristic elliptic retinal hemorrhages with white centers occur in the bacterial endocarditides, acute and subacute, and in the severe anemias, notably pernicious anemia.

2. The discovery of this lesion because of its significant appearance may aid in early diagnosis.

3. The lesion occurs in both eyes, with a little greater frequency in the left eye in our series.

4. The lesion has little prognostic value in subacute bacterial endocarditis; in several instances it had appeared and disappeared in successive crops many months before death.

5. We suggest that the designation "retinitis of endocarditis" might after further study be appropriately applied.

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11. Friedenwald, J. S., and Rones, B.: Tr. Am. Ophth. Soc. **28**: 286-300, 1930.

INTRAMUSCULAR USE OF LIVER EXTRACT

MAXIMAL RESPONSES OF RETICULOCYTES FROM DAILY INTRAMUSCULAR INJECTION OF EXTRACT DERIVED FROM TEN GRAMS OF LIVER: PRELIMINARY COMMUNICATION *

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Recently we [1] reported that the so-called fraction G of Cohn, Minot and their associates [2] was found to be suitable for intravenous injection into patients with pernicious anemia. We have recently discovered that excellent remissions can be obtained in patients with low red blood cell counts from a single intravenous injection of as little material as the extract derived from 20 Gm. of liver. Since the effectiveness of fraction G was demonstrated to be many times greater when given intravenously than when given by mouth,[1] the method appeared to be of practical value in the treatment of very sick patients or in those requiring unusually large dosage of effective principle by mouth. Certain immediate effects due to the presence of blood pressure lowering substances were readily controlled by injecting the material slowly. However, delayed reactions, sometimes of an unpleasant but apparently harmless character, occurred in about a third of the cases so far treated. The technical skill required for intravenous administration and the reactions sometimes following its use do not render the method ideal for general use. For these reasons it seemed worth while to develop a product suitable for intramuscular use and to examine its activity in the treatment of pernicious anemia. Success was in a measure guaranteed by the previous experience of Gänsslen,[3] who reported satisfactory results in the treatment of pernicious anemia by daily intramuscular injections of an extract derived from 5 Gm. of liver. Unfortunately, Gänsslen has not published the details of his method of preparation.

An extract for intramuscular use was prepared by a slight modification of the method employed in making the material for intravenous administration. The amount of a powdered commercial preparation of fraction G [4] derived from 10 Kg. of liver was poured into 1,600 cc. of distilled water and solution effected so far as possible by stirring and raising the mixture to the boiling point for five minutes. During the warming of the solution, 6 cc. of tricresol was added and the mixture allowed to cool to room temperature. Seventy-five cubic centimeters of five normal sodium hydroxide was added to bring the solution to about p_H 7.4, and 2.5 Gm. of dihydrogen sodium phosphate dissolved in 10 cc. of distilled water was added to act as a buffer. The p_H was checked, the volume made up accurately to 2,000 cc. and the solution allowed to stand in the icebox for two days. The supernatant liquid above the precipitate was removed by decantation and passed through a good grade of filter paper. The extract was then run through a Berkefeld filter and put up in 10 cc. amounts in glass vials with small rubber corks subsequently coated with celloidin. Sterility tests were performed. Each vial contained the extract derived from 50 Gm. of liver.

The activity of this material when given intramuscularly was tested by observations of classic cases of pernicious anemia. Into each of three patients daily intramuscular injections of 2 cc. (the extract derived from 10 Gm. of liver) were made by means of an ordinary hypodermic syringe and needle. These injections were without local or systemic reaction and were not painful. The clinical results were extremely satisfactory: the patients felt better within two days; within three days increases of reticulocytes were obtained, and a maximum production of reticulocytes was reached within from five to seven days. The red blood cell count increased rapidly with this therapy, as is shown in the accompanying table. At the end of a brief stay in the hospital the patients were discharged with the necessary equipment and instructions for carrying on their own treatment at home. Continued satisfactory progress has so far been observed.

In a fourth patient the daily use of intramuscular injections of 2 cc. of the extract (the material derived

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Acknowledgment is made of the assistance rendered by Dr. James H. Means in allowing us to carry out certain of these observations on patients in the medical services of the Massachusetts General Hospital.

1. Castle, W. B., and Taylor, F. H. L.: Intravenous Use of Extract of Liver, J. A. M. A. **96**: 1198 (April 11) 1931.

2. Cohn, E. J.; Minot, G. R.; Fulton, J. F.; Ulrichs, H. F.; Sargent, Florence C.; Weare, J. H., and Murphy, W. P.: The Nature of the Material in Liver Effective in Pernicious Anemia: I., J. Biol. Chem. **74**: lxix (July) 1927.

3. Gänsslen, M.: Ein hochwirksamer, injizierbarer Leberextrakt, Klin. Wchnschr. **9**: 2099 (Nov. 8) 1930.

4. Liver Extract No. 343 (N. N. R.).

from 10 Gm. of live.) was used as an adjunct to the previous intravenous injections necessitated because the patient was unable to maintain a red blood cell count of over a million per cubic millimeter while taking by mouth potent extract derived from 600 Gm. of liver daily. After four intravenous injections of the extract derived from 100 Gm. of liver at intervals of a week had raised the patient's red blood cell count from 1,000,000 to 3,000,000 red blood cells per cubic millimeter, a count of 4,000,000 red blood cells was obtained within ten days during the daily intramuscular injection of 2 cc. of extract given by the patient to himself.

As will be seen by an inspection of the data given in the table, an increase of the reticulocytes appeared within three days after the institution of intramuscular therapy, which is as soon as an increase of reticulocytes appeared with the intravenous method. This indicates that a response was initiated by the injection over three days of only 6 cc. of the intramuscular extract (derived from 30 Gm. of liver) and suggests that the method may be as effective in the treatment of very sick patients as the intravenous method and is far more satisfactory because of the total absence of undesirable

Response of Reticulocytes and Red Blood Cells in Patients with Pernicious Anemia to Daily Intramuscular Injection of Extract Derived from Ten Grams of Liver

Days of Treatment	Case 1		Case 2		Case 3	
	R. B. C., Millions	Reticulocytes, per Cent	R. B. C., Millions	Reticulocytes, per Cent	R. B. C., Millions	Reticulocytes, per Cent
0	0.895	2.2	1.185	0.8	1.670	2.2
1	.....	2.2	.....	1.2	.....	6.0
2	0.880	6.2	1.290	0.8	1.660	1.8
3	.....	12.6	.....	3.0	.....	11.2
4	0.570	24.8	1.250	13.2	1.740	16.4
5	.....	44.0	.....	22.6	.....	34.2
6	1.110	34.4	1.840	29.0	1.710	18.6
7	.....	47.0	.....	32.8	.....	18.2
8	1.565	42.8	1.900	10.6	2.200	10.4
9	.....	25.4	.....	16.0	.....	12.8
10	1.860	10.8	2.140	11.6	2.110	5.4
18	2.825		2.440		3.140	

immediate or delayed reactions. In the treatment of the severely ill patient we recommend the intramuscular injection, preferably at two different sites, of a total of 4 cc. of the extract on the first day, followed thereafter by daily injections of 2 cc. each.

As the result of these preliminary observations it appears that the intramuscular use of liver extract has all the theoretical advantages of the intravenous method and is decidedly practical both from a therapeutic and from an economic standpoint. Furthermore, some patients apparently prefer to inject a small quantity of liver extract intramuscularly rather than to ingest a large quantity of liver or to take an extract by mouth which is not altogether palatable. From our preliminary observations it seems possible that the extract necessary for a week's treatment when taken by mouth may, if given by daily intramuscular injections, suffice for from five to six months. The intramuscular method may be of even greater advantage in those cases requiring unusually large doses of extract by mouth or actually a life-saving measure in the exceptional type of patient illustrated by the fourth case, previously mentioned. As we have already suggested,[1] the adequate treatment of cord lesions requiring large amounts of liver extract may be greatly simplified by the parenteral injection of liver extract alone or as an accessory to oral therapy.

SUMMARY

1. A method of preparing an extract of liver suitable for intramuscular injection and highly potent in pernicious anemia is described.

2. Maximal reticulocyte responses were obtained from the daily intramuscular injection of the extract derived from 10 Gm. of liver.

3. The potential therapeutic and economic advantages of this method are suggested.

AN UNUSUAL SKIN REACTION TO EPINEPHRINE *

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LOS ANGELES

The extensive use of epinephrine in the treatment of bronchial asthma is accompanied by surprisingly few untoward reactions, even when self medication is permitted. Occasionally one sees an apparent constitutional idiosyncrasy, although such responses are often due to doses in excess of those necessary to obtain clinical relief. A permanent local change in the skin is seldom seen, even by those treating allergic or dermatologic conditions, although such a reaction is said to occur [1] when a large dose is used, especially if part of it is given intracutaneously. Three patients seen in the Allergy Clinic in the past two years demonstrate an interesting response to this drug. The most striking of these cases is reported, and a second case, which apparently demonstrates a part of the mechanism operative in the first case, is briefly described.

REPORT OF CASE

CASE 1.—DeR., a white man, aged 31, suddenly began to wheeze following a "cold" in October, 1923, and experienced marked paroxysmal dyspnea. The condition has varied in severity since, but he has had some symptoms practically daily and is always worse at night. The symptoms are aggravated or precipitated by an upper respiratory infection, emotional reaction, smoke—especially from burning tobacco—a large meal and by taking acetylsalicylic acid. The physical—except those of the skin—and the roentgenologic observations are typical of those in asthma. No skin sensitivity to food, pollen, epidermal or other stock allergen could be demonstrated.

In 1926, on the advice of another patient, he commenced self medication with a 1:1,000 solution of epinephrine hydrochloride. The dose varied from 0.2 cc. to 0.5 cc. and was repeated from one to six times daily. About one year ago he increased the dose to 0.62 cc. (10 minims). He seldom uses more than 30 cc. in a period of from seven to ten days; a nominal dosage for a patient with chronic asthma. All injections were self administered although he occasionally received some assistance from members of his family. His description of the technic used and the appearance of the lesions follows:

The injection site was cleaned with alcohol. It was not always possible to sterilize the needle; many asthmatic patients never sterilize syringe or needle yet infections are surprisingly rare. If the epinephrine solution was colored, it was not used.

In order to administer the drug into the scapular region the patient would stand in front of a mirror; some member of the family would "pick up" the skin, which was quite loose, while he made the injection. For one or two days after a welt might be felt at the site; at times the area was pale, at other times red. From ten to fourteen days was required for the lesion to reach the pitted scar stage. Apparently the lesions were produced with small as well as with the largest doses.

* From the Allergy and Special Medicine Clinics, Los Angeles County General Hospital, Unit number 1.

1. Useful Drugs, ed. 5, Chicago, American Medical Association, 1921.

CUTANEOUS EXAMINATION

Cutaneous lesions are distributed over the anterior aspect of the left thigh, the anterior lateral and posterior areas of both upper arms, the shoulders and the upper back. The lesions for the most part are discoidal scars varying in size from 2 mm. to 0.5 cm. in diameter, with a definite suggestion of grouping in the readily accessible areas. The lesions are not confined to these areas alone, however. Distributed over the upper and middle parts of the back they appear quite discrete, becoming confluent over the outer surfaces of the arms. This is likewise true of the thigh, where confluence is prominent over the anterior surface. The lesions are more abundant in the accessible areas, where the patient has frequently repeated the injections, while the other areas have been utilized less often. Three superficial ulcerations are noted over the shoulders, one over the left external upper part of the arm and two on the left thigh externally. An evolutionary variation is evident in these ulcerations. The earliest pathologic change appears as a superficial nodule, elevated above the surface of the skin and of an indolent red color. The border of the lesion is not well defined and fails to present the diffuse bright red halo seen as an accompaniment to the common furuncle. The lesion is slightly tender to pressure and quite solid. The next pathologic change appears as a superficially crusted ulceration, the base of which is moderately infiltrated and surrounded by a dull red erythematous halo. Superficial necrosis has evidently taken place. The end-result is scar formation with varying degrees of dull erythema surrounding the lesions, depending on their age. Some are soft and level with the surface of the skin while others are depressed and the overlying skin is atrophic. Some of the latter have sharp, ringlike margins. Others are hypertrophic and strongly elevated above the general level of the skin. Moderate amounts of pigment are present in the cutaneous borders.

Without a convincing history of such cutaneous pathologic changes following the injection of epinephrine, the diagnosis is not without difficulty. A confusing element of acne vulgaris is present on the back and shoulders to a degree sufficient to justify the clinical differentiation of acne varioliformis. Dermatitis factitia, secondary infection associated with the inexpert use of morphine hypodermically, and dermatitis herpetiformis are other diseases unavoidably included in the differential diagnosis. No history of the use of morphine has been obtained.

With the increasing use of epinephrine hypodermically and commonly self administered, the dermatologic picture presented by this patient becomes increasingly important as a part of a differential group already attendant with diagnostic difficulties. It should be mentioned that the drug has afforded him satisfactory relief and symptoms of a generalized idiosyncrasy have not been observed.

CASE 2.—B. R., a white woman, aged 35, gave the date of onset of asthma as at the age of 16, while living in Chicago. The condition developed after an upper respiratory infection. The patient obtained complete relief for a period of seven years as a result of moving to California. In 1923 symptoms returned and have persisted almost constantly since. The patient is markedly sensitive to bermuda grass (*Cynodon dactylon*). The physical and stereoscopic examinations were not remarkable. A history of asthma in a paternal grandfather and in a sister was obtained.

The patient has used epinephrine for several years. The usual dose is from 0.2 cc. to 0.5 cc. of a 1:1,000 solution. She has noted that the blanching of the skin produced by the injection persists for many hours—on several occasions it was still detectable thirty-six hours after the injection. Her skin is compact and firmly adherent to the fascial planes. This is in contrast to the previous case, in which the patient has a "loose" skin. The color is red, similar to that seen in plethora, and blanches on digital pressure. Six hours after the injection of 0.4 cc. of epinephrine a blanched area, approximately 4 by 5 cm. in diameter, was noted. A few days later the test was repeated, using one-half the previous amount, 0.2 cc. When observed six hours later she presented a definite blanched area, roughly circular and about 2.5 cm. in diameter. She stated that this area was detectable several hours afterward. These observations seem to indicate a protracted action of relatively small doses of the drug in question. Such protracted action would seem to be necessary to produce the type of lesions described in the first patient. It should be emphasized that the patient shows no permanent gross changes in the area in which injections have been given.

Lilienthal [2] and a few other workers have reported observations that seem to indicate that epinephrine may remain in the site of injection for several hours. His work has not been confirmed by all who have tried to repeat the experiment, and it must be admitted that clinical criteria alone are notoriously unreliable and are influenced to a great degree by the patient's impressions. The two cases already reported seem to furnish more definite evidence than does a statement that one's asthma is relieved as a result of rubbing the site of injection that epinephrine, or its manifestations, may be detected for many hours in the area in which it is injected.

CONCLUSIONS

The subcutaneous administration of epinephrine may be attended with certain protracted or even permanent manifestations. In one patient so small a dose as 0.2 cc.

Right shoulder, showing the skin lesions at the site of injection of epinephrine (case 1).

caused a definite anemia of the skin in an area of at least 3 cm. in diameter. This anemic area was observed more than six hours after the injection, and somewhat larger doses have prolonged such manifestations for a period of from twenty-four to thirty-six hours. In spite of such protracted action with accompanying anemia of the skin, no permanent change is observed. The first patient discussed manifests the end-results, we believe, of such protracted anemia. In this case the skin immediately around the site of injection shows marked atrophy suggesting the appearance of the foveated scar which follows a "primary" vaccine virus reaction.

These unusual reactions may represent a local hypersensitivity or idiosyncrasy to the drug, but they have not been accompanied by any untoward systemic responses.

2. Lilienthal, Howard: Epinephrine: A Method of Prolonging Its Effect in Asthma and the Depression of Shock, J. A. M. A. **90**: 1192 (April 14) 1928.

These observations may be construed as evidence in favor of the theory that the action of epinephrine may be prolonged by massage of the site of the injection. This evidence is of more value than is a patient's statements concerning the improvement in his subjective symptoms of bronchial asthma.

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RECENT FACTS ON TRANSMISSION OF TUBERCULOSIS *

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Some recent articles concerning the markedly increased number of positive tuberculin reactions found in student nurses during their training and the high incidence of clinical tuberculosis found among students and recent graduates of schools of nursing have attracted widespread attention. Facts already available point to the necessity of marked changes in the care of tuberculous patients in all hospitals, including the special hospitals for the tuberculous. These changes are necessary primarily for the protection of those employed in the institutions and those in training for the nursing and medical professions. Such changes may involve considerable expenditure on the part of the institutions if the situation, which now appears to be a disgrace to the institutions and a major health hazard to the students of medicine and nursing, particularly the latter, is to be remedied.

For a long time we physicians have been teaching prevention of tuberculosis. The hearty support of legislators has been secured through assurance not only that patients suffering from tuberculosis were being cared for but that the communities were being protected by the removal of a certain dangerous class of tuberculous patients from them. The inference was that tuberculosis is a communicable disease and therefore that the community is in danger through associating with those who, because of home conditions or unwillingness to cooperate, will not protect others from their disease. I am one of those who firmly believe that this program of isolation, together with the excellent program of those interested in the live stock industry, is responsible in no small way for the reduced incidence of positive reactors to tuberculin in this country.

The incidence of positive reactors to tuberculin is reaching a very low level in some parts of the country. Slater recently reported an incidence of approximately 9 per cent in a rural community. McCain has found an incidence of approximately 4 per cent in a mountainous part of his state. Has the incidence actually decreased in this country or has it always been so low? Good evidence is accruing to show that the incidence is definitely decreasing. Perhaps the best evidence available is that from Framingham, Mass., where Armstrong conducted the famous Framingham demonstration and where, approximately ten years later, on the suggestion of Krause and Chadwick, observations were made and it was found that the number of positive reactors for children in the same age period as those examined ten years previously was approximately 25 per cent less.

How logical we were in our arguments to legislators concerning the protection of communities from tuberculosis! But how extremely illogical were our arguments once the patients had been collected together in institutions. Merely getting the patients out of the homes and into institutions seems to satisfy the tuberculosis workers and hence the public, almost as though some magic power about the institutions rendered harmless the bacilli with all their dangers. We said to those who inquired regarding the dangers of exposure in institutions for the tuberculous that it was much safer to be in them than in public buildings frequented by the general population. The argument was that we knew what every one was suffering from in the hospital for the tuberculous, but when we intermingled with people elsewhere we were never certain who might have tuberculosis. So far as that statement went, it was true that we knew that the patient was suffering from tuberculosis, but mere knowledge of the existence of any danger, without corresponding change in tactics, is no protection. It is now difficult to understand how we justified the argument regarding the safety of institutions and then failed to offer adequate protection to the workers. I am inclined to think it was actually believed that protection was being offered to others by the very simple measures employed, such as covering the mouth during coughing and sneezing, and expectorating into gauze, paper napkins and sputum cups, and then making provision for the destruction of the bacilli so collected. No one can doubt that this did offer some protection, but subsequent developments have shown that it was not sufficient.

Our original work in the isolation of patients, plus the accomplishments of the veterinarians, has made possible the observation of the transmission of tuberculosis in the human family by an accurate method. In other words, the procedures of the past have done much to bring about such a reduced incidence of tuberculin reactors that there is now in many communities a large group of young adults with negative reactions who can be carefully observed for the appearance of positive reactions. In other words, the tuberculosis scene has been moved so far back on the stage of life that first infection tuberculosis now makes its appearance in adult life, whereas it was formerly believed that it practically always appeared in infancy and early childhood. It is hoped that the scene may be gradually pushed back on the stage until eventually the span of life will be reached without first infection tuberculosis developing in the human body. Perhaps no better place to make observations exists than in schools of nursing and medicine. Here it is possible to start with the freshman class or with the probationers in a school of nursing and, by the use of the tuberculin tests, determine with a high degree of certainty which students have not yet developed the first infection type of tuberculosis. By subsequent tests on these negative reactors, one can determine quite accurately when allergy appears. In schools of medicine and nursing, the negative reactors become positive in such large numbers after exposure that one must keep constantly on the alert. By careful examination, it is possible to determine, in a certain percentage of those who become positive, where the focus is before it has become extensive. Enough evidence is now available to prove conclusively that the incidence of positive tuberculin reactors increases alarmingly in schools of nursing and medicine. One who makes careful observations is able to secure from students of such schools results which are almost as accurate as animal experiments with tubercle bacilli.

* Prepared with the aid of a grant from the Research Fund of the University of Minnesota.

* Read in part before the staff of the Bellevue-Yorkville Health Demonstration, New York, April 7, 1931, and the National Conference on College Hygiene, Syracuse, N. Y., May 7, 1931.

From an extensive study now in progress at the University of Minnesota and in private hospitals in Minneapolis, I desire to call attention to just a few of the many cases of students of nursing and medicine who gave only negative tuberculin reactions until they were compelled, with inadequate protection, to care for tuberculous patients. Following this, their tuberculin tests became positive, and some of these students now have demonstrable lesions. Attention is being called to these cases, since tuberculosis among students of nursing and medicine now appears to be one of the greatest problems in the whole field of medicine. In a single afternoon recently, I examined three student nurses and two medical students in whom the disease was sufficiently advanced to produce symptoms for which they sought advice. Therefore, studies should be initiated in all schools of medicine and nursing at once, with a view to stopping the onslaught of the disease among the young members of our professions.

In the University of Minnesota Medical School there have been a number of students who, until they had taken a special tuberculosis service, had been negative to the test when a full milligram of tuberculin was used. Soon after this service they became markedly allergic, as indicated by the tuberculin reaction. The last one of this group came to me, April 23, 1931. He had been negative to tuberculin throughout his stay at the university. About the middle of January, 1931, he took a tuberculosis service, lasting only ten days. However, April 21, 0.1 mg. of tuberculin was administered intracutaneously at the Students' Health Service of the University of Minnesota and in forty-eight hours he had all the characteristics of a three plus local reaction and a definitely visible lymphangitis, extending from the area of the reaction to the axilla. Needless to say, this boy and those who have gone before him with the same experience are convinced of the communicability of tuberculosis and of the necessity of protection, which can be provided only through a strict contagious technic.

In the fall of 1928 a young man was transferred to the University of Minnesota from another school. On admission to this school, his tuberculin reaction was negative. During the year he had considerable contact with patients, including those suffering from pulmonary tuberculosis. July 13, 1929, he came to me, stating that about a month previously he had experienced some pain over the right lower axilla. Roentgenograms were made which showed a possible slight lesion in the right apex. The tuberculin test was then definitely positive. When I first saw him, he had pleurisy with effusion in the right base and was sent to an institution. The effusion increased, and he was definitely ill over a considerable period. He is now serving as an intern in the University Hospital but is still highly allergic.

In 1929 a young woman was serving an internship in one of our hospitals. She had been negative to tuberculin repeatedly. A part of her internship was devoted to a tuberculosis service in another institution. Soon after she returned from this service, she experienced some pain in the right side of the chest. The tuberculin test was applied and found to be strongly positive. Roentgenograms showed a parenchymal lesion in the right second interspace near the periphery. She was not ill; that is, she was quite free from symptoms except chest pain. However, she was advised to become a strict bed patient. In due time her lesion had shown no extension, and graduated exercise was prescribed. Her physical condition improved satisfactorily. May 1, 1930, she began work on a fellowship in pediatrics in another university. She had been at work only about twenty days when she experienced excruciating pain in the right lower axilla. The physician who examined her a few days later found pleurisy with effusion. She returned to her home and was a strict bed patient with severe symptoms over a considerable period of time. The lesion in the right second interspace has become smaller and now appears as one in which calcium is being deposited. I am strongly inclined to believe that this is the primary tuberculous focus and that ultimately it will appear as a Ghon tubercle.

May 17, 1931, I was called to the home of a physician, whose son is a sophomore in the medical school. The tuberculin test applied in January, 1930, had been negative. During the latter half of the winter quarter and the first part of the spring quarter of 1931 this boy was taking a course in physical diagnosis which required rather intimate contact with tuberculous patients. In January, 1931, the tuberculin test was markedly positive. A roentgenogram, January 30, was negative. April 30, the patient experienced an unpleasant sensation on the right side of his chest. He requested more roentgenograms. These, made on May 5, show a parenchymal lesion in the right second interspace and pleurisy with effusion at the base of the right side. He is now a strict bed patient with some bitterness, which I fear is justified, toward the school which failed even to suggest protective measures against tuberculosis.

Nov. 26, 1930, I was called to see a student nurse who was suffering from pain over the right lower axilla. She had been reared in a small town in South Dakota, where she had apparently escaped tubercle bacilli since her tuberculin reaction was negative when she entered the University of Minnesota School of Nursing. Subsequent examinations gave negative results. During parts of August and September, 1930, she was assigned to the care of a patient who was desperately ill and was said to have bronchiectasis. This patient coughed violently and expectorated profusely. No protection was offered the girl against possible exposure to tuberculosis. Such patients require close contact on the part of the nurse if they are to be made comfortable. The patient died, and I am told that the postmortem examination revealed pulmonary tuberculosis. At any rate, in October, the student nurse's tuberculin test showed a positive reaction to a three plus degree. When I first saw her in November, an effusion was present. Inoculation of fluid aspirated from her right pleural cavity into the bodies of guinea-pigs caused their death. Autopsy showed that they died of tuberculosis.

April 20, 1931, a senior medical student came to me with the following history: Repeatedly he had been tested with tuberculin and had reacted negatively. The last test was on Jan. 5, 1931, and, on the same date, roentgenograms of his chest were entirely negative. From Dec. 26, 1930, to Jan. 5, 1931, however, he had served on a tuberculosis service. He had again served on this service from March 8 to March 18. On March 14 he reacted positively to the tuberculin test, and films of his chest, March 16, showed an area of infiltration in the lung parenchyma.

Another senior medical student had reacted negatively to tuberculin on many occasions, the last being in December, 1930. A little later he took a special tuberculosis service, after which he noticed beginning enlargement of the left cervical lymph nodes. Biopsy, in April, 1931, showed the nodes to be tuberculous.

What does it all mean? This is the question so frequently asked by students of nursing and medicine. They are in a quandary. They are told by one person that it has a certain meaning, by another that it has a different meaning. Therefore, it becomes necessary to clear the air of the different interpretations placed on the positive tuberculin reaction and the first infection type of tuberculosis. Knowledge regarding the development of the first infection type of tuberculosis is so new that it will take some time for its dissemination and acceptance. Until that time, diversity of opinion will continue.

That student or any one else who has been negative to the tuberculin test when it has been properly applied and a sufficiently large dose used, and who later reacts positively, is allergic. In fact, the tuberculin test is a test for allergy. I believe that allergy appears only in the bodies of persons who have foci of tubercle bacilli. These foci have resulted in areas of disease of the tissues. The areas may be microscopic in proportion, or it may be possible to demonstrate them by present methods of examination, particularly by the x-rays.

Is it better to have a positive or a negative tuberculin reaction? Students ask this question hundreds of times every year. There are extant in the literature numerous statements to the effect that those who react positively to tuberculin have immunity to tuberculosis. Since there is no accurate test for immunity, a good deal of what has been said in the past regarding it was based on personal opinion.

There are those who argue that the veterinarians are jeopardizing the future of the human race by their successful eradication of tuberculosis among cattle. The argument is that the race should be tuberculized, and the best way to accomplish this is to allow the children to take products from tuberculous cattle, since the bovine type of tubercle bacillus does not manifest as great virulence in the human body as the human type does. Those who presented the argument, however, showed weakness to the point of shrinking from the issue and vanishing from the scene when some one suggested that, if their arguments were logical, the best procedure would be to inoculate the bovine type of tubercle bacilli into the bodies of all children and thus tuberculize the race. Too much destruction among children was known to have occurred from the bovine type of tubercle bacilli to recommend any such procedure. Yet the same workers had argued for a method of tuberculization with no control of dosage.

Calmette came on the scene with a bovine strain of tubercle bacilli that had been attenuated and administered them in the living state to large numbers of girls and boys. This resulted in allergy in many cases, as manifested by the tuberculin test. This seemed a logical procedure to many, but from recent studies it appears that the attenuated bacillus may definitely regain its virulence. Moreover, recent studies have led to the belief that allergy is dangerous. Krause says:

> The allergic state is recognizable only through the appearance of the allergic reaction. This reaction is marked characteristically by elements of acute tissue response, by features of acute inflammation. If intense enough, the reaction will result in tissue necrosis (caseation), and there is reason to believe that the necrosis, a destructive phase of tuberculosis, is brought about by the allergic reaction. But, involved in the allergic reaction is also an accelerated proliferation of cells that build up nodular tubercle, and as one end-result of the reaction must be regarded an enhanced fibrosis of the tuberculous process.

Thus, persons highly allergic may be in danger, since further infection (exogenous or endogenous) results in necrosis and leads to symptoms. This apparently accounts for the fulminating type of tuberculosis, which is seen rather frequently in infancy. After the primary infection has occurred and allergy is at its height, if fairly heavy doses of tubercle bacilli are taken into the body or spread from a focus already present and lodge in tissues that are extremely sensitive or allergic, the immediate result is marked inflammation. If it is in the lung, areas of pneumonia appear around the foci. The inflammation may be so marked and extensive and necrosis occur so rapidly that the patient may die in a short time.

With these dangers from the bovine bacillus as it is taken from the bodies of cattle and from Calmette's attenuated strain, it would seem impossible that there could be any recommendations of exposure to living virulent tubercle bacilli as they come from the human body. Yet, I am sorry to say that students of medicine and nursing are being left with the impression that it is a good thing to come in contact with patients suffering from tuberculosis and receive just the right dose to give them a positive tuberculin reaction. Even if we believe that there is an immunizing dose of tubercle bacilli, who would be so bold as to state just what that dose is for a given individual? Even if there were some way of determining with accuracy what that dose is for a given individual, who would dare say that contact with a tuberculous patient is the proper method of securing that dose? Under such conditions the dosage is entirely uncontrolled. The number of bacilli which the student's body receives from contact with tuberculous patients may vary from a few to huge numbers. In such argument, logic is entirely lacking.

What actually happens when students of nursing and medicine are placed in rooms with tuberculous patients, with inadequate protection against the spread of tubercle bacilli? Where careful observations have been made in this country, it has been shown that approximately 30 per cent of the probationers in schools of nursing react positively to the tuberculin test but, after they have taken tuberculosis services, from 80 to 100 per cent have been found to react positively. Since a positive reaction indicates an allergic state and since there is reason to believe that the destructive phase of tuberculosis is brought about by the allergic reaction, it would seem obvious that nothing but harm has been done by allowing students to take unmeasured doses of tubercle bacilli into their bodies and develop a state of allergy. But what immediate evidence is there that allergy is dangerous to the students? The best evidence is that from 5 to 12 per cent of student nurses have presented themselves with tuberculous disease that required treatment soon after allergy was manifested by a positive tuberculin reaction. Of the seven cases cited in this paper, four developed pleurisy with effusion soon after the allergic reaction was present. Pleurisy with effusion is looked on as one of the early manifestations of tuberculosis. In itself, it is an allergic reaction. Many patients are desperately ill from it over a considerable period of time. Abundant clinical experience has taught that pleurisy with effusion is frequently followed by pulmonary tuberculosis of the destructive type. Therefore, in the light of such evidence, who will dare state that an allergic reaction, as manifested by the tuberculin test and brought about by exposure to human beings suffering from tuberculosis, is of benefit to a student?

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If further argument is necessary, I would call attention to the work of two recognized American pathologists, Opie and Robertson. Long ago, Opie showed that the adult and destructive type of tuberculosis is nearly always preceded by the first infection type with its deposits of calcium. A positive tuberculin reaction indicates that somewhere in the body there exists the first infection type of tuberculosis. Robertson, who has made an extensive and detailed study of tuberculous lesions resulting from first infection with tubercle bacilli, made the following extremely significant statement: "I am very greatly impressed with the microscopic study of these apparently healed lesions. Very many of them show evidence of some activity histologically and I am steadily being strengthened in the opinion that the tuberculous lesion in most instances constitutes a menace of renewed activity as long as the individual may live." In 1925, Krause said, "The only rational attitude is to protect all human beings, of whatever age, against exposure."

From the available evidence, I desire to leave the answer to the reader and to the students themselves as to whether exposure of students to tuberculous patients should be allowed to continue or whether it should be prevented by the adoption of an adequate contagious technic.

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Clinical Notes, Suggestions and New Instruments

STAPHYLOCOCCIC PERIMENINGITIS (PERIPACHYMENINGITIS): REPORT OF TWO CASES

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In a recent review [1] of eighteen cases of staphylococcus septicemia, four cases were reported that presented meningeal symptoms, two that resulted from lesions of the cerebral meninges, and two in which the infection was confined to the spinal dura mater. While cerebral meningitis and meningo-encephalitis are not infrequently recognized as sequelae of staphylococcus sepsis, there are few references in the literature to the localization of this organism about the spinal meninges.

As has been previously pointed out,[1] the mortality resulting from staphylococcus infections in the blood stream is high, and the metastatic processes in the spinal canal are no exception. Yet, their early recognition and treatment is of paramount importance if further extension and irreparable injury to the spinal medulla (cord) are to be prevented. Furthermore, it has been claimed that these metastases are often of attenuated virulence and, because of their accessibility, early drainage may produce a cure or amelioration of symptoms. Emerson [2] reports a case of intradural abscess with apparent recovery following a laminectomy, but the patient finally succumbed to metastases elsewhere in the body.

In external pachymeningitis or peripachymeningitis, the inflammation develops in the outer layer of the spinal dura mater, which adjoins the bony surfaces of the spinal column. Although roentgenograms in my cases and Emerson's failed to show any involvement of the vertebrae, there is some question whether a periosteal suppuration may not have been the forerunner of the extradural process. At times, these osteomyelitic foci are so small that they escape observation unless a minute search of the entire vertebral column is made. However, there is no reason to doubt that extradural spinal abscesses are encountered without primary bone disease.

The initial symptoms are due to irritation of both motor and sensory nerve roots, and, if there is progressive swelling, additional symptoms develop as the result of pressure on the cord, the exact nature depending on the region affected. The chief symptoms, according to Hunt,[3] are "pain in the back, radiating down the legs or arms, stiffness, muscular spasms, motor paralysis—late in the disease hyperesthesia, sphincter disturbances, local tenderness and changes in reflexes." The sequence of these symptoms as given by Hunt is open to some question, since the hyperesthesia may be demonstrated at an early stage of the syndrome, while sphincter disturbances are not infrequently among the first manifestations of the disease process.

Backache is apt to be one of the earliest and most pronounced complaints, the patient tending to lie in bed, often with vertebrae hyperextended, and to avoid carefully every movement. Nucal rigidity is frequently present but is rarely a pronounced symptom, Kernig's sign is frequently found, and symptoms involving the parts of the body distal to the lesion are characteristic of the syndrome.

This preponderance of symptoms directed toward the distal rather than the upper half of the body is exemplified by the hyperesthesia, which is at first limited to, or at least much more distinct over, that part of the trunk and extremities whose sensory nerves enter the cord at the inflammatory process. In a case described by Morawitz,[4] the sensitiveness of the abdomen to the bedclothes was so great that temporarily an acute purulent peritonitis was suspected. Tenderness on pressure over a localized portion of the spine is a distinguishing attribute and suggests the region primarily involved. The establishment of this level is usually easy because the patient's sensorium is clear, as a rule, almost until the end. In acute diffuse leptomeningitis, the tenderness is seldom of as great degree or limited to a definite vertebral level. The early appreciation of these sensory changes is of great importance, and a painstaking study to determine their presence should be undertaken without delay.

Distinguishing Characteristics Between Staphylococcic Perimeningitis and Cerebrospinal Meningitis

	Staphylococcic Perimeningitis	Cerebrospinal Meningitis
Headache	Absent or not intense	Marked
Stupor	Absent until last	Present, frequently complete unconsciousness
Cranial nerves	Intact	Usually involved
Nausea and vomiting	Usually absent	Marked
Pulse	Usually increased	Often slow
Nucal rigidity	Variable	Usually marked
Hyperesthesia	Limited to, or much more pronounced at, or just distal to the lesion	Not localized in definite segment
Hypesthesia	Found distal to lesion	Absent
Vertebral tenderness	Marked and localized over area involved	Not as severe; no definite level
Kernig's sign	May be present	Usually present
Lumbar puncture	Increased cell count; staphylococcus may be found; Queckenstedt test positive	Staphylococcus may be found; Queckenstedt test usually negative

Finally, lumbar puncture yields information of marked value. If the cerebrospinal fluid shows pus containing staphylococci, or even if there is a markedly increased cell count without the presence of the organisms (except in the blood culture or in some suppurative process), these phenomena "are strongly suggestive of staphylococcic perimeningitis." [5] Of course, one cannot decide, from the fact that pus is obtained, whether the infection is extradural or in the subarachnoid space, but the presence of pus in a nonstuporous patient is a presumptive sign of extradural involvement. Pus in the fluid withdrawn on

1. Lowenstein, P. S.: Staphylococcus Septicemia, Am. J. M. Sc. **181**: 196 (Feb.) 1931.
2. Emerson, K.: Staphylococcus Infection of Spinal Meninges, Boston M. & S. J. **196**: 465 (March 24) 1927.
3. Hunt, E. L.: Diseases of the Spinal Cord, in Tice: Loose-Leaf Practice of Medicine, Hagerstown, Md., W. F. Prior Company, Inc. **9**: 310, 1921.
4. Morawitz, P.: Ueber akute eiterige Perimeningitis (Peripachymeningitis), ein charakteristisches Krankheitsbild bei Staphylokokkenerkrankungen, Deutsches Arch. f. klin. Med. **128**: 294 (Feb.) 1919.
5. Barker, L. F.: Recovery from Staphylococcus Septicemia with Meningitis, Thrombophlebitis, Embolic Pneumonia and Nephritis, Internat. Clinics **1**: 1 (March) 1925.

lumbar puncture may not be anticipated unless, of course, the needle is inserted at the site of a lumbar abscess. The Queckenstedt test may be of value in cases in which the diagnosis is not clear, and should demonstrate a more or less complete block in proportion to the extent of the exudate or swelling.

Morawitz [4] suggests the following factors as aids in differentiating the condition from cerebrospinal meningitis: (1) the absence of outstanding cerebral symptoms; (2) the relative freedom of the upper half of the body and the frank meningitic phenomena of the lower half, and (3) the severe, pronounced, extreme pressure pain in a circumscribed part of the vertebral column.

The table epitomizes the distinguishing characteristics between staphylococcic perimeningitis and cerebrospinal meningitis (acute purulent leptomeningitis).

REPORT OF CASES

CASE 1.—*Dental cyst; staphylococcus septicemia (?); osteomyelitis of femur; abscess of thigh; peripachymeningitis.*

L. W., a woman, aged 21, had a dental cyst removed in 1926. Subsequently a painful swelling developed on the medial aspect of the left knee, subsiding after several weeks but recurring three or four times during the past few years. In September, 1928, a right axillary abscess was incised, followed by a flare-up in the knee, for which the patient was admitted to the hospital, Nov. 21, 1928. Roentgenograms of the left femur showed marked cortical thickening of the lower three inches, but no sequestrum or involucrum. Blood cultures and the Wassermann reaction were negative. Incision just above the knee evacuated pus which grew staphylococci on culture. The patient was discharged, December 11, with the wound almost healed.

About three weeks later she complained of backache in the thoracic region, and in the ensuing few weeks, of difficulty in urinating, and progressing weakness and stiffness of the lower extremities, for which she was readmitted to the hospital, Jan. 26, 1929. At this time neurologic examination (Dr. Archie Carr) revealed normal sensorium and cranial nerves, with upper reflexes equal but hyperactive. The knee and ankle reflexes were markedly active, almost clonic. The abdominal reflexes were absent, the sense position of the toes was defective, and there was a sensory level at the sixth and seventh thoracic skin segments. Roentgenograms of the spine were negative. The parents refused to permit a lumbar puncture and removed the patient from the hospital.

A chiropractor was consulted, but as there was an increase in symptoms, the patient was placed in the care of Dr. I. H. Boemer, to whom I am indebted for the following notes. The patient reentered the hospital, Feb. 11, 1929, and examination two days later showed that the level of anesthesia was unchanged but that there was a complete motor paralysis of the lower extremities. Cisternal puncture revealed a lemon yellow cerebrospinal fluid, not under increased pressure, with a cell count of 5 and normal globulin. On culture, *Staphylococcus aureus* was found. Roentgenograms of the spine were still negative. February 21, a laminectomy of the sixth, seventh and eighth thoracic vertebrae was performed. Pus appeared at the right of the seventh lamina, but the dura was not opened. Closure was made with drainage. The patient died, February 26. An autopsy was not obtained.

CASE 2.—*Abscess of back;* Staphylococcus aureus *septicemia; peripachymeningitis.*

M. E. C., a woman, aged 43, had repeated attacks of follicular tonsillitis and was being treated for lumbago. An abscess over the left flank developed, was opened and drained. Twenty-four hours later incontinence of the urine and numbness of both legs developed, and the following day the patient was unable to move the legs. I am indebted to Dr. R. M. Klemme, who saw the patient at this time, for the notes of the case.

Examination, Sept. 2, 1930, evealed a spastic paraplegia with loss of sensation from the tenth dorsal skin segment distally and loss of sphincter control, but no evidence of meningeal involvement. Roentgenograms of the spine were negative.

Laminectomy of the seventh, eighth and ninth thoracic vertebrae was contemplated. When the eighth spinous and transverse processes were removed, a large extradural abscess was encountered and drained. Culture showed *Staphylococcus aureus.*

The following day, the patient was able to discern a pin prick over the entire area that had been anesthetic the previous day. However, the blood cultures repeatedly yielded *Staphylococcus aureus,* and, despite all measures, the course of the patient was gradually downhill. She died, September 21.

CONCLUSIONS

In a patient suffering from a pyogenic infection, and subsequently developing pain in the back with radiation to other parts of the body, the possibility of a metastatic involvement of the spinal meninges must be kept in mind. The diagnostic criteria are the presence of a suppurative focus with or without a positive blood culture (although, as I have previously pointed out,[1] a blood culture found to be sterile in the presence of clinical symptoms of septicemia should be repeated until a definite diagnosis is made), neurologic signs pointing to cord irritation and later pressure, and cerebrospinal fluid showing a marked cell increase with or without the demonstration of the invading organism on culture or smear.

Laminectomy and drainage of the purulent focus in selected cases, together with treatment for the patient's general condition, offer the sole chances of recovery. It is only by early recognition of meningeal involvement and prompt surgical intervention before irreparable cord injury has occurred, that this condition may be coped with successfully.

703 University Club Building.

THE USE OF SPLINTS AND DRAINS FOLLOWING RESECTIONS OF THE GOITROUS THYROID

C. A. ROEDER, M.D., OMAHA

The appearance of the neck following operations on the thyroid gland depends on asepsis, proper drainage and normal extension of the head. When the patient is placed in bed,

Fig. 1.—Multijointed splint completely buried in thick dressings.

whether or not in an elevated position, the head often remains flexed and the neck twisted for from one to several weeks after the operation. During this time, irregular folds develop and the flap slides down and heals in a lower position than the normal. This often produces above the scar superabundant tissue which can be removed only by a resection.

For some time I have been applying for the first four days a multijointed metal splint outside the dressings, well padded above and below the edges so that the patient is unconscious of

any disturbing pressure. This splint holds the head extended and keeps the neck from twisting, resulting in a more rapid reunion of the flap as well as a comfortable support of the head, if the dressings abundantly surround the edges of the splint (fig. 1).

In 1922 I[1] described the first technic for lateral drainage which has proved more satisfactory than midline drainage. During the past three years I have further modified my method of lateral drainage, which occupies a position midway between the methods of those who always use deep drainage and of those who close all wounds tightly. I have found only two indications for placing a drain beneath the sternothyroid and sternohyoid muscles; viz., when there are large substernal pockets, and when it is impossible to accomplish perfect hemostasis in the time

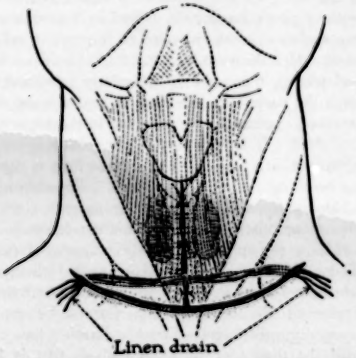

Fig. 2.—Linen suture material as drains between the flap and the sternohyothyroid muscles.

allowed for an operation on a patient considered as a very poor risk. In all other cases I have placed the drain between the flap and the outer surface of the coapted sternohyoid and sternothyroid muscles. The material used for drainage is important, as Hertzler[2] has reported. After trying silkworm gut, silk, chromic catgut and gauze, my assistants finally decided on four linen strands, which are removed on the third or fourth day (fig. 2). With proper hemostasis the only material that requires drainage is serous, which is produced almost entirely by the inner surface of the flap and the outer surface of the deep fascia or ribbon muscles. Since holding the neck comfortably but firmly with the splint, the flap unites to its former bed sooner, thereby decreasing the amount of serous drainage. The advantage of linen strands for drains is that they are not only efficient but also leave no increase in scar tissue in the line of incision.

1426 Medical Arts Building.

1. Roeder, C. A.: Thyroidectomy, J. A. M. A. **79**:2066 (Dec. 16) 1922.
2. Hertzler, A. E.: Am. J. Surg. **7**:293 (Sept.) 1929.

How Consciousness Appears.—Biologically speaking, the nervous system is not to be regarded as an intelligence bureau, which gathers information for a sovereign mind, enthroned within the brain, nor yet as a chief executive officer to carry out that sovereign's decrees. Sensory impulses from many sources reach the brain, where they pass back and forth through a multitude of association paths, augmenting or inhibiting each other before they finally break through into motor paths. Previous experience of the individual, having left its trace in the organization of the central nervous system, alters the character of the present reactions. It is in connection with the neural activity involved in these complex associational processes that consciousness appears—shall I say as a by-product?—at least as a parallel phenomenon.—Ranson, S. W.: The Anatomy of the Nervous System, Philadelphia, W. B. Saunders Company, 1931.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

KELLOGG'S RICE KRISPIES

Manufacturer.—Kellogg Company, Battle Creek, Mich.

Description.—A ready to eat cooked and toasted rice cereal flavored with malt syrup, sugar and salt.

Manufacture.—A selected grade of cleaned and polished domestic rice, is weighed into large rotary cookers and a water solution of malt syrup, sugar and salt added. The rice is cooked under steam pressure with rotation of the cooker. The thoroughly cooked rice is partially dried with hot air, passed between revolving flaking rolls, and subsequently toasted in a rotary toasting oven. The toasted rice is packed in waxed paper inserts in paper cartons. After filling, the insert is sealed at the top and the carton sealed.

Chemical Composition.—

(proximate analysis)	per cent
Moisture	2.4
Ash	3.2
Fat (ether extract)	0.3
Protein (N × 6.25)	6.9
Crude fiber	0.4
Carbohydrates (by difference) other than crude fiber	86.8

Calories.— 3.78 per gram
107.4 per ounce

Claims of Manufacturer.—Kellogg's Rice Krispies is a delicious, crisp, easily digested cereal which crackles and pops on addition of milk or cream. It may be served in many appetizing recipes, as soups, candies, macaroons or desserts.

EMBO
(Purified Wheat Embryo or Germ)

Manufacturer.—General Mills, Inc., Minneapolis.

Description.—Wheat embryo or germ practically free from bran or other parts of the wheat berry; hermetically sealed in cans.

Manufacture.—Wheat is cleaned and freed from other seeds and foreign material by the usual processes employed in wheat flour milling. The cleaned wheat is broken between corrugated steel rolls. The broken wheat is separated into various streams. Those streams of coarse granular "wheat middlings" consisting of endosperm granules, adhering pericarp (bran) and more or less intact wheat germ are passed over specially constructed machines, which remove the small pericarp particles and much of the endosperm from the germ. The germ thus separated (purified germ) retains the form originally possessed in the wheat grain and is practically free from bran and endosperm. The purified embryo without any heat or other treatment is packed in cans by automatic filling machines. The manufacturing processes do not impair in any way the natural vitamin potency of the original germ in the wheat berry.

Chemical Composition.—

(proximate analysis)	per cent
Moisture	11.0–14.0
Ash	3.5– 4.5
Fat (ether extract)	9.0–12.0
Protein (N × 6.25)	25.0–30.0
Crude fiber	1.5– 2.0
Carbohydrates (by difference) other than crude fiber	50.0–37.5

Calories.— 3.78 to 3.81 per gram
107.4 to 108.2 per ounce

Vitamins.—Contains the vitamins of natural wheat germ in an unimpaired state; vitamin A is present; a good source of vitamin G and an excellent source of B and E.

Claims of Manufacturer.—The product retains the food value and the vitamin content of natural wheat germ or embryo which is not modified in manufacture by any heating, bleaching or other process. Unless otherwise prescribed it can be conveniently ingested with minimum loss of vitamin potency by mixing with cereals, vegetables, fruits, etc., after these have been cooked.

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SATURDAY, AUGUST 1, 1931

THE CEREBROSPINAL FLUID

In an introduction to a recent translation of Claude Bernard's Experimental Medicine, Prof. L. J. Henderson [1] of Harvard University has pointed out that we owe the theory of the constancy of the "internal environment" of the body to the distinguished French physiologist. There is no better illustration, Henderson remarks, of his penetrating intelligence. A few scattered observations on the composition of blood sufficed to justify, in his opinion, the assertion that the constancy of the internal environment (milieu intérieur) is the condition of free and independent life. A large part of the physiologic research of the last two decades may fairly be regarded as a verification and illustration of this theory, which, as Claude Bernard perceived, serves to interpret many of the most important physiologic and pathologic processes. In a recent study, Fremont-Smith and his collaborators [2] at the Harvard University Medical School have called attention to the fact that the true "milieu intérieur" is not the plasma but the intercellular fluid, a protein-free filtrate of the plasma, escaping through the capillary walls and bathing the tissue cells.

The Harvard investigators have suggested that there is an analogy between various well known fluids of the body and the intercellular fluids. This seems to be well established by their elaborate study of the human cerebrospinal fluid. With the exception of sodium, which varies more in the cerebrospinal fluid than in the serum, the average range of variation for any substance in the cerebrospinal fluid is equal to or less than its range in the blood serum. This is true also for the total osmotic pressure. In the fifty-eight fasting patients for whom the freezing point was determined in both serum and cerebrospinal fluid, the maximum value in the serum was —0.608 degree and in the cerebrospinal fluid —0.603 degree; the minimum value in the serum was —0.534 degree and in the spinal fluid —0.534 degree; hence the dictum that the cerebrospinal fluid of human beings is in osmotic equilibrium with the blood plasma and has a constancy of composition as great as that of the blood plasma.

Considerations such as the foregoing may form the basis for conclusions regarding the existence of disease, as evidenced by examination of the cerebrospinal fluid. Fremont-Smith points out that the principal changes in the chemistry of the spinal fluid characteristic of all forms of acute meningitis, including tuberculous and acute syphilitic meningitis, are an increase in cells and protein and a decrease in sugar and chlorides. In the blood plasma the sugar is frequently increased, even though the patient may be fasting, and this increase is in marked contrast to the decrease in the sugar in the spinal fluid. It is striking evidence, he believes, that the diminution of sugar in the spinal fluid is due to a local breaking down of the sugar. The chlorides in the blood plasma are nearly always decreased, and this decrease accounts in large part for the decrease in the chlorides in the spinal fluid in the majority of cases.

There has long been a debate as to whether the cerebrospinal fluid is an active secretion or merely a dialysate of the blood plasma formed by capillary pressure ultrafiltration. Fremont-Smith [3] has championed the theory of filtration dialysis that is based primarily on the distribution of electrolytes between the blood plasma and the cerebrospinal fluid. Cockrill's [4] recent study at the Stanford University Medical School of the distribution of nonelectrolytes between the two fluids has led him to question the extreme physicochemical hypothesis. He admits that there are certain inequalities in the distribution of electrolytes between the plasma and the cerebrospinal fluid of such a nature as would compensate for the presence of protein in considerable amounts in one of the fluids and which strongly suggest that the cerebrospinal fluid is in the nature of a dialysate. However, he finds that certain nonelectrolytes, particularly urea, are likewise unequally distributed between the two fluids and in such a manner that it is difficult to conceive of the spinal fluid being formed entirely by plasma ultrafiltration. The equilibrium that exists among the electrolytes, Cockrill argues, is not incompatible with the assumption that the spinal fluid is a secretion. This equilibrium may be looked on solely as the mechanism for bringing the osmotic pressure of the cerebrospinal fluid to approximately that of the plasma, just as the bile, concerning which there is no argument that it is a secretion, has essentially the same osmotic pressure as the plasma, minus its protein content. The answer to the controversial questions thus remains to be finally established.

1. Bernard, Claude: An Introduction to the Study of Experimental Medicine, translated by H. C. Greene, New York, Macmillan Company, 1927.

2. Fremont-Smith, Frank; Dailey, Mary E.; Merritt, H. H.; Carrol, Margaret P., and Thomas, G. W.: The Equilibrium Between Cerebrospinal Fluid and Blood Plasma: I. The Composition of the Human Cerebrospinal Fluid and Blood Plasma, Arch. Neurol. & Psychiat. **25**: 1271 (June) 1931. Fremont-Smith, Frank; Daily, Mary E.; Merritt, H. H., and Carrol, Margaret P.: The Equilibrium Between Cerebrospinal Fluid and Blood Plasma: II. The Composition of the Human Cerebrospinal Fluid and Blood Plasma in Meningitis, ibid. **25**: 1290 (June) 1931.

3. Fremont-Smith, Frank: Nature of Cerebrospinal Fluid, Arch. Neurol. & Psychiat. **17**: 317 (March) 1927.

4. Cockrill, J. R.: Nonelectrolytes: Their Distribution Between the Blood and the Cerebrospinal Fluid, Arch. Neurol. & Psychiat. **25**: 1297 (June) 1931.

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HYPERTHERMIA IN ULTRAHIGH FREQUENCY FIELDS

The value of heating parts of the body by external devices has long been appreciated in relation to a variety of disorders. Localized changes in the circulation can be brought about, with evident benefit in suitable cases. Of late, the development of febrile reactions within the body has been attended with quite different therapeutic reactions. The inoculation of certain types of syphilitic patients, notably cases of dementia paralytica, with malaria organisms, inducing fever thereby and consequent destruction of toxic agents, is one of the advances of modern medicine. A number of procedures for induction of febrile "attacks" have been attempted with some success. One method consists in exposure of the body to electrical oscillations of high frequency. Within such a field there may be marked production of heat throughout the body. The process can be perfectly controlled.

A group of investigators [1] at the Albany Medical College have studied the effects of high frequency oscillators. These are constructed on the principle of a short wave radio transmitter, except that the energy is concentrated between two plate electrodes instead of being directed from an aerial. Previously it had been noticed that when a workman was in the field of a short wave radio transmitter a rise of temperature of as much as 2.2 degrees developed in fifteen minutes, the height of the rise being determined by the time he remained in the field or by his proximity to the apparatus.

According to the most recent observations on small experimental animals, exposure to an ultrahigh frequency field for periods of from one-half to one hour daily and raising their body temperature to 40.5 C. (104.9 F.) does not seem to retard their growth appreciably. The reproductive organs in the male and the female are not appreciably affected, so that there is no loss in power to breed. Repeated exposure to an ultrahigh frequency field in which the body temperature is raised to 40.5 C. does not produce any abnormal pathologic lesions. It is not difficult to raise the body temperature still higher. The temperature returns to normal quite rapidly unless the animal has been heated above 42 C. (107.6 F.) Animals heated above 42.5 C. (108.5 F.) for any great length of time do not survive treatment. When such high body temperatures still compatible with life are attained, the results are such as one would expect from the consequent concentration of the blood. These are readily overcome. There is oliguria and the blood shows a high content of many catabolites, as would be expected from the heightened metabolism of the induced fever. There is an increase in red blood cells and in total white cells. Besides the increase in red cells there is in many instances a marked increase in immature forms of red cells, suggesting a stimulation of the hematopoietic tissues. The possible therapeutic applications of hyperthermia thus produced through purely physical means are now open for study. The dangers and limitations have been determined by the preliminary investigations. The procedure seems somewhat safer than the induction of fever of infectious origin. Jacobsen and Hosoi point out that the ease with which high frequency heating produces congestion of the extremities suggests that it may be of value, when cautiously used, in the treatment of certain forms of peripheral ischemia, such as occurs in Raynaud's disease, Buerger's disease and arteriosclerosis. The susceptibility of the male germinal cells to heat must never be overlooked. The use of fever as a therapeutic agent seems almost grotesque to the layman who has been accustomed to combat rise in temperature with antipyretic drugs. Perhaps hyperthermia will come into fashion; at any rate, the ease with which the temperature can be controlled in the high frequency field and the character of some of the tissue responses suggest possible therapeutic application. At the same time the extreme danger of quackery in the use of a potent electrical device needs to be emphasized. The Albany studies contain ominous warnings about undue hyperthermia. The morphologic changes occurring in the tissues were congestion of the organs, peripheral hyperemia, cloudy swelling, fatty degeneration, dehydration, glycogen depletion, focal hemorrhages, especially in the gastro-intestinal tract, epithelial hyperplasia in the parenchymatous organs, and stimulation of the bone marrow. Following prolonged periods of heating, degenerative lesions occurred in the male germinal epithelium.

1. Knudson, A., and Schaible, P. J.: The Effect of Exposure to an Ultrahigh Frequency Field on Growth and on Reproduction in the White Rat, Arch. Path. **11**:723 (May) 1931; Physiologic and Biochemical Changes Resulting from Exposure to an Ultrahigh Frequency Field, ibid. **11**:728 (May) 1931. Jacobsen, V. C., and Hosoi, Kiyoshi: The Morphologic Changes in Animal Tissues Due to Heating by an Ultrahigh Frequency Oscillator, Arch. Path. **11**:744 (May) 1931.

"PANAGGLUTINABLE" ERYTHROCYTES

Three years ago it was noted by Thomson [1] of the pathologic institute, University of Copenhagen, that certain blood samples undergo degenerative changes on standing, which renders their corpuscles "panagglutinable"; i. e., agglutinable with all types of human serum. He reported this phenomenon as a possible source of error in clinical blood grouping. Subsequent studies by his colleague Friedenreich [2] showed that this "transformation" of the erythrocytes is presumably due to bacterial contamination and is conceivably brought about by an altered biochemical specificity of the blood corpuscles by bacterial enzymes. This observation raised the phenomenon of artificial "panagglutinability" from a relatively unimportant and easly avoidable technical error to a serious phenomenon in current immunologic research, the debated possibility of the experimental "grafting" or "induction" of new specificities in living tissues.

Experimentally "induced" or "mutant" specificities are now well known in pathogenic micro-organisms.

1. Thomson, Oluf: Ztschr. f. Immunitätsforsch. **52**:85, 1927.
2. Friedenreich, V.: Ztschr. f. Immunitätsforsch. **64**:455, 1929.

Examples include test tube "dissociates" of pure cultures of such different antigenic powers as to be easily mistaken for different bacterial species,[3] artificial "transformation" of typed pneumococci into pneumococci of a second type,[4] spirochetes from tertiary syphilis antigenically distinct from those of the primary lesions,[5] and filtrable viruses losing their original vaccination specificity on transference to another animal species.[6] Similarly "induced" specificities in animal tissues have been postulated [7] but have not yet been supported by adequate experimental evidence.

The Thomson phenomenon has been subject to detailed experimental study. Hallauer [8] of the Hygienic Institute, University of Basel, has demonstrated that the Thomson "panagglutinability" can be induced in both human and animal erythrocytes by a number of bacterial filtrates, the new or "induced" specificity being apparently independent of the species of corpuscles. Injection of heterologous "panagglutinable" corpuscles into rabbits stimulates the production of a specific agglutinin for the "transformation characteristic." Such "transformed" corpuscles, however, are not antigenic for the same animal species, from which it is evident that the "induced characteristic" is not due to a mere mechanical absorption of bacterial products. Apparently a new protein specificity is synthesized or "uncovered" as a result of the action of the bacterial filtrates.

Synthesis of a new protein characteristic would not necessitate a radical change in erythrocyte structure. It was shown by Landsteiner,[9] Avery [10] and others, for example, that a simple conjugation of a protein molecule with an amino-acid, lipoid or polysaccharide is sufficient to confer on it a new protein specificity. The "engrafted" specificity is to a certain extent independent of the nature of the protein molecule. Reversing this synthesis, it is easy to picture a hydrolytic cleavage destroying or liberating a superficial atomic group, thus altering or uncovering a "latent" antigenicity.

Many puzzling problems of applied immunology could be explained if clinicians were at liberty to assume that a similar "induction" or "uncovering" of new protein patterns can take place in the living animal body and that such "mutant" specificities could be multiplied in the body. At present the most convincing arguments in favor of this new immunologic postulate are drawn from genetics; the "induced genes," "mutant genes" and "genetic perverts" of current theory. Accumulated genetic evidence translated into corresponding immunologic metaphor furnishes many promising working hypotheses.

3. Hadley, P.; Delves, E., and Klimek, J.: J. Infect. Dis. **48**: 1 (Jan.) 1931.
4. Dawson, M. H., and Sia, R. H P.: Proc. Soc. Exper. Biol. & Med. **27**: 989, 1930.
5. Georgi, F., and Praussnitz, C.: Arch. f. Hyg. **103**: 173, 1930.
6. Laidlaw, P. P., and Dunkin, G. W.: J. Comp. Path. & Therap. **41**: 1 (March), 209 (Sept.) 1928.
7. Manwaring, W. H.: J. Immunol. **19**: 155 (Aug.) 1930.
8. Hallauer, C.: Ztschr. f. Immunitätsforsch. **67**: 15, 1930.
9. Landsteiner, K., and van der Sheer, J.: J. Exper. Med. **48**: 315, 1929; **50**: 407 (Oct.) 1929.
10. Avery, O. T., and Goebel, W. F.: J. Exper. Med. **50**: 533 (Oct.) 1929.

Current Comment

VIRGINIA'S GOVERNOR AND THE PUBLIC HEALTH

Immediately following the death of Dr. Ennion G. Williams, who was the first and only state health commissioner of Virginia and who served continuously from July, 1907, until the time of his death, June 6, 1931, Governor John Garland Pollard of that state, with the unanimous recommendation of the state board of health, requested the United States Public Health Service to detail Dr. Warren Fales Draper to serve as state health commissioner until a permanent successor is selected. Governor Pollard deserves for this unusual action the congratulations and commendation of every physician and public health official in this country. He has recognized the truth of the statement made by Disraeli that the preservation of the public health is the first duty of the state. He has risen above political considerations, in taking this action solely to insure the continuity of properly qualified public health leadership in Virginia. Those who know the difficulty of securing public health officials in this country at the meager salaries usually offered and with the lack of any guarantee of continuity of service will the better appreciate the significance of the action taken in Virginia. Apparently, the state board of health and the governor realized that time will be required to secure a permanent health officer with the proper public health and educational qualifications. It is also significant that the governor of Virginia was supported by leaders both in the practice of medicine and in the field of public health. The press of the state has been enthusiastic in its endorsement. The governors of other states, the mayors of cities, and county boards employing full time health officials may well be inspired by this action.

Association News

CONTRIBUTIONS FOR MEMORIAL SALON IN PERSHING HALL

The sum contributed this week to the Pershing Hall Memorial in Paris brings the total to $2,495.10. The list of those who have contributed during the current week follows:

T. K. Lewis, M.D., Birmingham, Ala.
Walter P. Anderton, M.D., New York
W. R. Chittick, M.D., San Diego, Calif.
P. M. Kinney, M.D., Bennettsville, S. C.
Jacob Braun, M.D., New York

MEDICAL BROADCAST FOR THE WEEK
American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday and 10:30 a. m. on Saturday, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

August 3. Pioneers of Medicine.
August 8. Fatigue.

Five minute health talks may be heard over the Columbia Broadcasting System on Monday, Wednesday, Thursday and Saturday, from 1 to 1:05 p. m., Chicago daylight saving time.

The program for the week is as follows:

August 3. Back to Nature.
August 5. How to Care for Snake Bites.
August 6. Saying What We Mean in Medical Matters.
August 8. Saying What We Mean in Medical Matters (Cont'd).

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Health Officers Appointed.—Dr. Lewis H. Howard, who has been city health officer of Tucson since April 1, has been appointed health officer of Pima County, the city and county units being combined. Dr. Howard succeeds Dr. Alvy Nelson Crain, who resigned to become health officer of Maricopa County, with headquarters in Phoenix.

ARKANSAS

Society News.—The Benton County Medical Society sponsored a public health meeting and free eye clinic, July 9, at Bentonville. Dr. Hermann J. G. Koobs, Rogers, spoke on public health protection, and Dr. Carl E. Rice, U. S. Trachoma Hospital, Rolla, Mo., on recognition and prevention of trachoma.

Licenses Restored and Revoked.—The license of Dr. William W. Hornsby, North Little Rock, which was revoked in November, 1930 (THE JOURNAL, Nov. 29, 1930, p. 1677), was restored, May 31. The license of Dr. Joseph B. Story, Dierks, was revoked the same day for "advertising special ability to cure chronic and incurable diseases."

CALIFORNIA

License Restored.—The license to practice medicine of Samuel D. Cotterell, Los Angeles, which was revoked, Oct. 22, 1930, because of a narcotic conviction, was restored at the meeting of the state board of medical examiners, February 5, and he was placed on five years' probation without narcotic privileges.

Personal.—Dr. Adelaide Brown, San Francisco, has resigned as a member of the state board of health, effective, July 1; Dr. Brown had held the position since 1915.——Dr. Douglas R. Drury, Harvard University Medical School, Boston, has been appointed professor of physiology at the University of Southern California School of Medicine, Los Angeles.

Hospital News.—Dr. Cyril B. Courville, resident physician in neurology at the Los Angeles General Hospital, is presenting a course of ten lectures of neuropathology at the county hospital, without charge to physicians.——Dr. Sylvan L. Haas, assistant chief surgeon of the Shriners Hospitals for Crippled Children, San Francisco, since 1923, has been made chief surgeon.

Society News.—Among speakers at a conference on maternity care, July 13-16, in Los Angeles by the bureau of child hygiene of the state department of public health and the University of California at Los Angeles, were Drs. Richard A. Bolt, Cleveland, and Ellen S. Stadtmuller, San Francisco, on "Prevention of Maternal Mortality" and "History, Development and Future Plans for Maternal Care," respectively.

State Society Appoints Cancer Commission.—The California Medical Association at its recent annual meeting authorized the formation of a permanent cancer commission to represent the association in the fight against cancer, with the following ends in view: provision of adequate means in California for the education of the medical profession in the early diagnosis of cancer, provision of more adequate facilities for diagnosis and treatment of cancer patients, and encouragement of research. Nine members have been appointed, as follows: Drs. Charles A. Dukes, Oakland, chairman; Lyell C. Kinney, San Diego; Alson R. Kilgore, William Ophuls and Harold Brunn, San Francisco; Orville N. Meland, Clarence G. Toland and Avrum H. Zeiler, Los Angeles, and Henry J. Ullmann, Santa Barbara. Dr. Junius B. Harris, Sacramento, president of the association, is a member ex officio.

DISTRICT OF COLUMBIA

Physician Drew Plans of First Capitol Building.—At a recent meeting of the Medical Society of the District of Columbia, Dr. Adolphus B. Bennett presented a paper on "Dr. William Thornton—A Member of a Century Ago." In presenting this biographic material, Dr. Bennett pointed out that Dr. Thornton was appointed architect of the capitol in 1792, following the acceptance of his plans for the capitol building at a time when there were relatively few architects in America. Hallette was appointed the practical architect under him. As funds for the construction of the building were lacking, Dr. Thornton went to Philadelphia and London and raised $300,000 by the sale of bonds. In 1794, when he was 33 years old, he was appointed by President Washington one of the first commissioners of the District of Columbia in charge of erecting the federal buildings. Dr. Thornton was born May 27, 1761, on the island of Tortola, West Indies. He received the degree of doctor of medicine in Edinburgh in 1784 and continued his studies in Paris. On arrival in America he at first lived in Georgetown, and later at 1331 F Street, Washington. There are said to be three known portraits of him, one in the office of the commissioner of patents, a Washington family has a miniature, and the Medical Society of the District of Columbia has the third. Dr. Thornton served as the commissioner of the District for eight years, after which the office was abolished; President Jefferson then appointed him clerk of patents, and he later became the first commissioner of patents. He became a member of the society in 1819, the year in which it received its first charter from Congress, and was vice president, 1820-1823. Dr. Thornton died, March 28, 1828, and was buried in the Congressional Cemetery.

GEORGIA

Unlicensed Midwife Fined.—Hattie Jones Scott, colored, Savannah, was convicted, July 10, of practicing midwifery without a license and sentenced to pay a fine of $200 or serve sixty days' imprisonment on the Brown Farm. The woman came to the attention of the health authorities when a Negro infant, at whose birth she officiated, developed tetanus. It was said that the woman severed the cord with household shears in violation of an ordinance, passed in 1922, requiring midwives to have licenses and to use sterilized scissors and dressings. As a result of this ordinance, deaths of infants from tetanus neonatorum rapidly became fewer, and for three years, 1925-1927, there were no deaths from these infections in Savannah. In 1928 and 1929 two infants died each year from tetanus, and, in 1930, the zero rate was broken by the death of the Negro infant.

ILLINOIS

Society News.—The staff of St. Clara's Hospital, Lincoln, entertained doctors of the community at a meeting, July 2, in the hospital. Among the speakers were Drs. Joseph M. Knochel on "Diagnosis and Treatment of Pulmonary Abscesses," and Carl F. Becker, "Clinical Aspects of Essential Hypertension."

New Laws Governing Coroners' Duties.—In the recent session of the Illinois legislature, two laws were passed affecting the duties of coroners and local registrars of vital statistics. Before these two laws became effective, if death occurred without medical attendance it was the duty of the undertaker to notify the coroner and the local registrar of the death. If no suspicion of death from violence, casualty or undue means existed, the local registrar could make and sign the death certificate, but, if any such suspicion existed, it was his duty to refer the case to the coroner. Under the new arrangement, only the physician last in attendance or the coroner can lawfully sign a death certificate. When death occurs without medical attendance, the undertaker must notify the coroner only. The coroner then must make a preliminary investigation as to the cause of death. If he determines that no suspicion of death from violence, casualty or undue means exists, he is then to make out a certificate of death. If he determines that death has resulted from violence, casualty or undue means, he must then hold an inquest. Presumably, these bills were enacted in the belief that they would remedy a situation reported by the Federal Bureau of the Census; namely, that in no other American city was there such a great proportion of deaths ascribed to unknown causes as in Chicago. It was reported that deaths in Cook County ascribed to unknown causes increased from 9 in 1928 to 330 in 1930, and the number of death certificates signed by local registrars jumped from zero in 1928 to 1,605 in 1930.

Chicago

University News.—A motion picture of the normal heart showing the relationship to the normal electrocardiogram has been recently completed by Dr. Clayton J. Lundy, clinical associate in medicine, Rush Medical College, for use in teaching electrocardiography.

Personal.—Maurice B. Visscher, Ph.D., professor of physiology and pharmacology in the University of Southern California School of Medicine, Los Angeles, has been appointed professor and head of the department of physiology, in the University of Illinois College of Medicine, to succeed the late

George P. Dreyer, Ph.D.——Dr. Irving S. Cutter, dean and professor of medicine, Northwestern University Medical School, received the honorary degree of doctor of laws from Jefferson Medical College, Philadelphia, at the recent commencement.

IOWA

University News.—A library of over 700 volumes, dedicated to the memory of Bird T. Baldwin, Ph.D., pioneer in the field of child study in the University of Iowa, has been opened in Iowa City for the use of university staff members and graduate students in child welfare. The library contains 3,000 pamphlets on child welfare and includes the late Dr. Baldwin's personal library, bequeathed to the university. Dr. Baldwin, who died in 1928, directed the first child welfare research station in the United States at the university.

Graduate Course for Practitioners.—The Speakers' Bureau of the state medical society, cooperating with the State University of Iowa College of Medicine, will offer two courses, extending over a period of ten weeks, two hours for each course, one day a week during the coming year. The heads of the departments in the college of medicine will give the lectures. The courses this year, it is hoped, will cover surgery and pediatrics. Any group of closely situated physicians that can provide a membership of thirty-five or forty for this work should write the bureau requesting that their county or community be one of the four centers in which the courses will be held. It is planned to begin the courses early in September.

Child Health Conference Organized.—A commission of sixteen members to study the problems of child health and protection in Iowa was appointed, June 9, by Gov. Dan W. Turner. Seven of the sixteen members are physicians: Drs. Channing G. Smith, Granger, president of the state medical society; Daniel C. Steelsmith, state health commissioner; Mae H. Habenicht of the state children's bureau; John H. Peck, president, Iowa Tuberculosis Association; J. F. Edwards, Ames, health and hygiene department, Iowa State College; Milford E. Barnes, professor of hygiene, State University of Iowa College of Medicine, Iowa City, and Fred Moore, Des Moines, who was a member of the White House Conference. The state medical society adopted a resolution at its recent annual session that the governor be requested to promote through existing agencies a Conference on Child Health and Protection in Iowa. Two conferences have already been held, section and subcommittee chairmen appointed and plans made to study the entire field of child welfare work in the state and to work out plans for coordination and more efficient operation of the various projects and activities.

Society News.—The Cass County Medical Society was addressed, June 18, in Atlantic, by Dr. Francis M. Roberts, Knoxville, on "Cults and How to Combat Them."——Dr. Edward W. Harrison, Winfield, addressed the Henry County Medical Society, June 19, on "Treatment of Pneumonia"; Dr. Garrett M. Van Ausdall, New London, "Trend of Medical Practice Today," and Dr. William S. Lessenger, Mount Pleasant, "Obstetric Complications."——Drs. Verl A. Ruth and John T. Strawn, Des Moines, addressed the Madison County Medical Society, June 8, on "Fractures" and "Gastric and Duodenal Ulcers," respectively.——A symposium on psychoneurosis was presented before the Marion County Medical Society, June 23, by Drs. Francis A. Ely, Hiram B. Henry and Russell C. Doolittle, all of Des Moines.——Dr. George Mogridge, Glenwood, among others, addressed the Mills County Medical Society, June 15, on "Delayed Resolution in Pneumonia."——The entire membership of the Palo Alto County Medical Society attended a dinner meeting, June 4, in Emmetsburg; this is believed to be the first meeting ever held with a 100 per cent attendance. Dr. Erval R. Coffey of the state health department spoke on "The County Health Unit."——Dr. Arthur E. Hertzler, Halstead, Kan., addressed the Polk County Medical Society, June 30, on "Recent Studies in the Pathology of the Genito-Urinary System."——The Poweshiek County Medical Society was addressed, June 2, in Montezuma by Dr. Benjamin F. Wolverton, Cedar Rapids, on "Cardiac Arrythmia."——Dr. Manning L. Allen, Tama, among others, addressed the Tama County Medical Society in June on "Injection Treatment of Internal Hemorrhoids."——Dr. Peter A. Bendixen, Davenport, gave an illustrated address on "Fractures of the Lower Extremity" before the Washington County Medical Society, June 2.——Dr. John L. Peppers, Webster City, was elected president of the Twin Lakes District Medical Society, which held its ninth annual assembly, June 18, at Rockwell City, and Dr. Paul W. VanMetre, Rockwell City, was reelected secretary. A directory containing the names of about 1,000 native sons of Iowa who are now practicing medicine outside the state was presented to attending physicians as a souvenir.——The Tenth District Medical Society was organized, June 26, at Creston; the meeting was opened with a heart and lung clinic, the clinicians being Drs. Christian B. Luginbuhl and John H. Peck, Des Moines.

KENTUCKY

Graduate Course for Practitioners.—Forty-three Kentucky physicians attended the fourth annual summer graduate course sponsored by the Kentucky State Medical Association and the University of Louisville School of Medicine, June 1-12. Clinics and lectures were held at the Louisville City Hospital and one day was spent in a study of tuberculosis at Waverly Hills Sanatorium. Among the physicians who made up the faculty were Drs. Granville S. Hanes, Virgil E. Simpson, Irvin Abell, Philip F. Barbour, Owsley Grant, John R. Wathen, Emmet F. Horine, William Barnett Owen and Claude T. Wolfe, all of Louisville.

Course in Medical Technology.—The University of Kentucky, Lexington, has arranged a four-year course in medical technology to meet the demand for laboratory technicians. The course, which will be under the supervision of the department of bacteriology, will include foreign languages, inorganic and organic chemistry, comparative anatomy, quantitative analysis, bacteriology of foods and of water and sewage, histology, embryology, immunology and serology, general pathology, laboratory diagnosis and x-ray technic. Senior students will be required to spend a part of their time in hospital laboratories in Lexington. For students who wish to prepare for medical college, substitutions may be made in the course to meet entrance requirements for medical colleges.

Society News.—Drs. Louis Wallace Frank and Gustave G. Altman, Louisville, among others, addressed physicians of the seventh councilor district at Crab Orchard Springs, July 22, on "Surgery of the Gallbladder" and "Hemolytic Staphylococcus Septicemia," respectively.——Drs. Francis M. Massie and Charles N. Kavanaugh, Lexington, addressed the Pulaski County Medical Society, Somerset, July 16, on "New Methods of Treatment in Gynecological Conditions" and tularemia, respectively.——The Madison County Medical Society was addressed, July 2, among others, by Drs. Howard D. McIntyre, Cincinnati, on "Neurosyphilis" and Charles C. Garr, Lexington, "Fractures of the Femur."——The Carlisle County Medical Society met, June 30, in Bardwell, when papers were read by Drs. Thomas J. Marshall, Paducah, on "Cerebrospinal Meningitis" and James F. Harrell, Bardwell, "Tuberculosis in Children."

LOUISIANA

Colonel Craig Appointed Professor at Tulane.—Col. Charles F. Craig, formerly director of the Army Medical School, Washington, D. C., has accepted an appointment as professor and head of the department of tropical medicine at Tulane University of Louisiana School of Medicine, New Orleans. Colonel Craig will be retired from the army at his own request, after a service of thirty-three years. From 1913 to 1916 and again in 1917-1918 he was commanding officer of the Central Department Laboratory, Fort Leavenworth, and in 1916-1917 was in charge of the departmental laboratory at El Paso, Texas. In 1920 Colonel Craig became professor of bacteriology, parasitology and preventive medicine and director of laboratories at the Army Medical School; in 1922 he went to Hawaii as medical inspector for that department, returning in 1926 for duty at the Army Medical School.

Department of Preventive Medicine Established.—A new department of preventive medicine has been established at Tulane University of Louisiana School of Medicine, New Orleans, as the result of an arrangement with the Commonwealth Fund of New York through which the university will participate in the rural health program recently initiated in Mississippi by the fund. An annual appropriation of $25,000 has been allotted by the fund to the school of medicine to establish the new department and to encourage attention to preventive medicine in other clinical departments. Five free scholarships have been established for undergraduate medical students from Mississippi, providing the student with $1,200 a year for four years, with the requirement that after graduation he shall practice at least three years in Mississippi. In addition, fifteen practicing physicians will be sent each year to Tulane for four months' graduate work. Their tuition and transportation to and from New Orleans will be paid by the fund and they will be allowed a monthly stipend of $250. Dr. William Harvey Perkins is head of the new department. The arrangement with Tulane is similar to that made with Harvard University Medical School for practitioners of Massachusetts recently (THE JOURNAL, January 31, p. 364).

MAINE

Personal.—Dr. Charles M. Bisbee, Rumford, was awarded a gold medal, emblematic of fifty years of medical practice, at the seventy-ninth annual convention of the Maine Medical Association, June 25-27, in Greenwood.

State Medical Election.—At the recent annual meeting of the Maine Medical Association, Dr. Ernest V. Call, Lewiston, was installed as president; Dr. Elmer D. Merrill, Dover-Foxcroft, was made president-elect, and Dr. Philip Webb Davis, Portland, reelected secretary. The next annual session will be held at Rangeley.

MARYLAND

Personal.—Dr. James M. Fenton has been appointed to fill the vacancy created by the death of Dr. William T. Riley, coroner of the central district of Baltimore. Dr. Bernard P. Herzog will take over Dr. Fenton's former district, the eastern section of the city.

MICHIGAN

Hospital News.—The new $650,000 tuberculosis sanatorium at Howell was formally dedicated, April 17. The new building contains 475 beds as compared with 240 in the old institution. Dr. George L. Leslie is superintendent.

Personal.—Dr. Charles J. Scavarda has been appointed health officer of Flint.——Dr. Clyde C. Slemons, Grand Rapids, was recently reappointed as state health commissioner for a four-year term.——Dr. Warren Plimpton Lombard, professor emeritus of physiology at the University of Michigan Medical School, Ann Arbor, received the honorary degree of doctor of science at commencement in June.

Upper Peninsula Medical Society.—The thirty-fourth annual meeting of the Upper Peninsula Medical Society will be held, August 13-14, at Houghton. The visiting speakers will include Drs. Waltman Walters, Rochester, Minn., "Surgery of the Gallbladder and Ducts"; Norman F. Miller, Ann Arbor, "Pelvic Infections"; Emerson Armor Fletcher, Milwaukee, "Surgical Kidney"; Ellis K. Kerr, Oak Park, Ill., "Nephritis"; Newell C. Gilbert, Chicago, "Coronary Disease," and Alfred W. Adson, Rochester, Minn., "Surgery of the Sympathetic Nervous System." Dr. Clyde C. Slemons, Grand Rapids, state commissioner of health, and Dr. Ray C. Stone, Battle Creek, president of the state medical society, will also be on the program among other Michigan speakers. The visiting physicians will play golf at the Houghton Club, and a clinic will be held at St. Joseph's Hospital, Hancock.

MISSOURI

District Health Units.—The drought area of Missouri has been divided into five districts of nine counties each, for the administration of the state's share of the $2,000,000 appropriated by Congress for the U. S. Public Health Service in drought areas. Each district will have a physician, a sanitary engineer, a laboratory technician and five nurses. The following district directors have been appointed: first district, Dr. Eldred K. Musson, headquarters at Eldorado Springs; second, Dr. William F. Lunsford, headquarters, Ozark; fourth, Dr. David T. Bowden, Jr., headquarters, Rolla; fifth, Dr. William W. Johnston, headquarters, Flat River. The third district will have headquarters at Van Buren, but a director has not yet been named.

Posture Contest for Children.—The St. Louis Tuberculosis and Health Society in cooperation with a committee of sixteen physicians sponsored a posture contest in St. Louis, July 8-10. One hundred and seventy-five children between the ages of 6 and 12 were entered. They were given preliminary examinations, and silhouettographic pictures were made of their posture and from these the posture was classed as excellent, good, poor or bad. Those in the excellent class were called for reexamination and two winners were selected. All children entering the contest were given photographs with printed instructions on how to correct such defects. The society plans to have the children return within a year to determine whether any improvements have resulted. The Shriners' Hospital for Crippled Children was in charge of making the pictures.

Increase Appropriation for Crippled Children.—One hundred thousand dollars was appropriated by the last general assembly for the Missouri State Crippled Children's Service at the University of Missouri Hospitals, Columbia. This is the largest appropriation received by the service since its establishment in 1927. The service was authorized by the fifty-fourth general assembly with an appropriation of $35,000 to be used for maintenance, transportation, appliances and medical and surgical care for the two years 1927-1928. The Eugene Field Foundation for the Relief of Crippled Children provided funds to continue the work when the appropriation was exhausted in 1928. The fifty-fifth general assembly appropriated $57,500 to conduct the service during 1929-1930. Additional money was again provided by the Eugene Field Foundation, this being supplemented by funds from civic organizations and individual donors. The report of the service for the period ended Dec. 31, 1931, shows 363 admissions to the hospitals with a total of 18,277 hospital days furnished and 385 outpatients served. Twenty-nine clinics were held at various places in the state, at which 725 children were examined. Sixty counties were represented at the twenty-nine clinics. In the two and a half years of the service, sixty-seven counties had been served, sixty-three of them having placed children in the university hospitals and four having had children cared for only in the outpatient department. There were ten counties on the waiting list for service to children at the time the report was made.

NEBRASKA

Society News.—Dr. George A. Young spoke on "Meningitis, Its Complications and Treatment" and Dr. Edwin Davis, Omaha, "Systematic Urological Investigations" before the Madison Five Counties Medical Society, June 27, in Plainview.

NEW YORK

Personal.—Dr. Charles H. Benson has resigned as medical superintendent of the Syracuse Free Dispensary Service, Syracuse, N. Y., after thirty-five years' service.

Society News.—A series of radio talks on preventive medicine, given every Monday, Wednesday and Thursday afternoon, from 5:45 to 5:55 p. m., was begun, July 1, by the Medical Society of the County of Erie, Buffalo.——Dr. Samuel G. Gant, New York, addressed the Medical Society of the County of Rockland, June 24, at Sparkill, on "Practical Proctology."——Members of the Associated Physicians of Long Island inspected methods of mosquito elimination and control at a meeting at Freeport, June 20. Dr. Arthur D. Jaques, Lynbrook, in charge of this work in Nassau County, later addressed the meeting.

Joint Society Meeting.—The medical societies of St. Lawrence, Franklin, Jefferson and Lewis counties held a joint meeting, June 25, at the St. Lawrence State Hospital, Ogdensburg, with an attendance of 125 physicians. Members of the hospital staff presented the following papers: Drs. Harold H. Berman, "Detection of the Future Neurosyphilitic Before Mental Symptoms Are Evident"; Leo P. O'Donnell, "Early Recognition of Mental Disease"; Paul C. Lybyer, "Mental Hygiene Clinics—Their Value and Uses"; Harry J. Worthing, "Medical and Psychiatric Treatment at the St. Lawrence State Hospital," and William E. Cudmore, "Results of Treatment." Typical cases were presented and two demonstrations were held, one on the use of spinal anesthesia, by Dr. John E. Free, and the other on laboratory methods, lumbar punctures and tryparsamide intravenous treatment, by Dr. Berman.

New York City

Society News.—Free health motion pictures are being shown in the city parks by the department of health in cooperation with the New York Tuberculosis and Health Association. The films emphasize prevention of tuberculosis and cancer, immunization against diphtheria, and general physical care.

Hospital News.—A penthouse containing two oxygen chambers for the treatment of pneumonia, asthma and heart disease is under construction on the roof of one wing of Harkness Pavilion of the Presbyterian Hospital at the Medical Center.——Reorganization of the medical staff of Sea View Hospital, Staten Island, into three divisions has been announced. Dr. George G. Ornstein is director of medicine; Dr. William F. Honan, of surgery, and Dr. Bela Schick, of pediatrics.

Personal.—Richard W. Linton, Ph.D., is reported to have resigned as assistant professor of bacteriology in the Columbia University College of Physicians and Surgeons to go to India to carry on research in cholera with the Indian Research Fund Association.——Dr. Louise Pearce, of the staff of Rockefeller Institute for Medical Research, has been appointed visiting professor of syphilology at Peiping Union Medical College, Peiping, China, for six months, beginning October 1.——Dr. Johannes W. W. Hoving was recently decorated by the king of Sweden with the Royal Order of the Northern Star, in recognition of his part in a memorial celebration in honor of Jennie Lind.

Psittacosis Is Made a Reportable Disease.—The New York City Board of Health, at a meeting, June 23, amended the sanitary code to include psittacosis among the diseases requiring notification to the department of health by physicians, hospitals, dispensaries and other institutions. The latest case of the disease was reported to the health department, May 20. A woman became ill with symptoms at first thought to be those of influenza. Suspicion was aroused, however, by the presence of several parrakeets, one of which was obviously ill. The diagnosis was later confirmed. The birds had been purchased by the woman in Yokohama during a trip around the world, from which she had recently returned.

OHIO

Hospital News.—The new $175,000 addition to the East Liverpool City Hospital has been completed, bringing the capacity of the institution to 100 beds.

University News.—Dr. Carl J. Wiggers will conduct a vacation course in the principles and practice of electrocardiography at Western Reserve University School of Medicine, Cleveland, beginning August 17.

Personal.—Dr. Robert H. Bishop, Jr., former health commissioner of Cleveland, has been appointed acting director of the University Hospitals of Cleveland, to serve until a permanent director can be named to succeed the late Frank Chapman, who died recently in Tucson, Ariz., following an operation for tumor of the brain. Dr. Bishop has been executive secretary of the University Hospitals for ten years.——Dr. George Y. Davis, who has practiced medicine in Sebring for twenty years, has been appointed health director of Mahoning County, with headquarters at Youngstown. He succeeds Dr. James F. Elder, resigned.——Dr. John L. Walker, Hillsboro, has been appointed health commissioner of Highland County, succeeding Dr. Henry H. Lowe, Leesburg.

Health at Cincinnati.—Telegraphic reports to the U. S. Department of Commerce from eighty-one cities with a total population of 36 million, for the week ended July 18, indicate that the highest mortality rate (16.4) appears for Cincinnati, and the rate for the group of cities as a whole, 10.3. The mortality rate for Cincinnati for the corresponding period last year was 13.6, and for the group of cities, 11. The annual rate for eighty-one cities for the twenty-nine weeks of 1931 was 12.8, as against a rate of 12.6 for the corresponding weeks of 1930. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits, or that they have a large Negro population may tend to increase the death rate.

Division of Hygiene Abolished.—Through a fiat of the general assembly, the division of hygiene of the state department of health has been abolished and its constituent bureaus have been distributed to other divisions. The bureau of tuberculosis, Dr. William D. Tillson, chief, has been assigned to the division of communicable diseases, Dr. Finley Van Orsdall, chief; bureau of hospitals, Clara E. Reeder, R.N., and bureau of dental hygiene, L. G. Bean, D.D.S., are grouped with the division of child hygiene, Dr. Alfred B. Lippert, chief. According to *Ohio Health News*, legislative economy resulted in the abolition of seventeen positions in the department of health, including one chief of division (hygiene) and the following subordinate personnel: two assistant sanitary engineers, three public health nurses, two chemists, one bacteriologist, one laboratory technician, two laboratory helpers, four stenographers and one editorial assistant. The change became effective, July 1.

OKLAHOMA

Society News.—Among speakers at the eleventh quarterly session of the Southern Oklahoma Medical Association, Chickasha, June 9, were Drs. Arthur E. Hertzler, Halstead, Kan., on warts; William Patton Fite, Muskogee, Buerger's disease, and Edward P. Allen, Oklahoma City, "Borderline Pelvis and the Uses and Abuses of Obstetrical Forceps."——Drs. Henry H. Turner, Oklahoma City, and John T. Wharton, Durant, were among the speakers at the meeting of the Southeastern Oklahoma Medical Association, McAlester, June 24, on "Ether Anesthesia" and "Relation of Neurology and Endocrinology," respectively.——Drs. William M. Taylor, Oklahoma City, and Walter H. Livermore, Chickasha, addressed the Garvin County Medical Society, Lindsay, June 17, on "Diarrheas of Infancy" and "Spinal Anesthesia," respectively.——Drs. James M. Byrum, Shawnee, and George N. Bilby, Oklahoma City, addressed the Lincoln County Medical Society, Chandler, June 1, on "Ruptured Appendix" and "Activities of the State Health Department," respectively.

PENNSYLVANIA

Society News.—Dr. Frederick S. Baldi, Philadelphia, addressed the western section of the Association of Prison Physicians of Pennsylvania recently in Pittsburgh on "The Prison Physician."——The Cambria County Medical Society, Johnstown, was addressed, July 9, by Drs. William O. Lubken on "Extra-Uterine Pregnancy" and William B. Templin, "Problems in Obstetrics."——Drs. Walter F. Donaldson, Robert L. Anderson and William H. Mayer, all of Pittsburgh, discussed the work of the Medical Society of the State of Pennsylvania at a meeting of the ninth councilor district at Clarion, May 28.

Cancer Course.—The fourth annual cancer study course will be held at Clearfield, August 13, in conjunction with the Tri-County Medical Society (Indiana, Clearfield, Jefferson). Dr. George W. Crile, Cleveland, will conduct a clinic and address a luncheon on "Cancer Problems." Group meetings of radiologists, surgeons and pathologists will be held with Drs. Karl Kornblum, Philadelphia, Samuel J. Waterworth, Clearfield, and Jonathan M. Wainwright, Scranton, as the respective directors. In the evening at dinner, the speakers will be Mr. Charles M. Schwab and Dr. Theodore B. Appel, Lancaster. There will also be a moving picture of cancer research at the Crocker Laboratory.

Philadelphia

Personal.—Dr. John Royal Moore, chief surgeon, Shriners' Hospital for Crippled Children, was recently appointed professor of orthopedics in Temple University School of Medicine. Dr. Carroll S. Wright has been appointed professor of dermatology and syphilology in the medical school; he is also associate professor of dermatology and syphilology in the Graduate School of Medicine of the University of Pennsylvania.

TENNESSEE

Automobile Deaths.—Automobile deaths in Tennessee last year increased from 1.27 deaths per thousand registered automobiles in 1929 to 1.4 per thousand in 1930, Dr. Eugene L. Bishop, state health commissioner, has announced. This is higher than the rate for the United States as a whole, 1.15 deaths per thousand vehicles in 1930. Deaths from this cause in the state totaled more than the sum of all deaths from typhoid, diphtheria and smallpox. On the population basis, the automobile death rate in the state was 20 per hundred thousand in 1930.

Society News.—Among speakers at the semiannual meeting of the Middle Tennessee Medical Association, Springfield, May 14-15, were Drs. Carl R. Crutchfield, Nashville, on spinal anesthesia; Leo C. Harris, Lawrenceburg, anesthesia in labor, and William R. Cate, Nashville, relationship of nephritis, hypertension and heart disease.——Dr. James S. McLester, Birmingham, Ala., addressed the Chattanooga and Hamilton County Medical Society, July 9, on "Protein Quota in Health and Disease."——Dr. Andrew Smith, Knoxville, addressed the Anderson and Campbell county medical societies, LaFollette, June 25, on "Toxemias of Pregnancy."——Dr. Clement H. Marshall, Memphis, among others, addressed the Gibson County Medical Society, Trenton, June 29, on "Syphilis and Pregnancy."

TEXAS

License Revoked.—The license to practice medicine in Texas of Dr. Max Kunstler, San Francisco, is reported to have been revoked, May 27. It was charged in the petition for revocation, filed January 9, that Dr. Kunstler was guilty of making false statements in his application for a license in Texas; that, since the issuance of his license, he had been guilty of violation of his pledge made on the application, and that he had been guilty of unprofessional and unethical conduct in that he had "advertised that he could cure diseases which are in fact incurable, together with other untruthful statements in his advertisements which were of a nature likely to deceive and defraud the public."

Society News.—At a meeting of the Twelfth District Medical Society, Corsicana, July 14, addresses were made, among others, by Drs. Richard J. White, Fort Worth, on tuberculosis of the knee joint; Howard R. Dudgeon, Waco, tumors of the ovary, and Herbert E. Hipps, Marlin, "Structural Concept of Static Disorders of the Foot."——Drs. Max R. Woodward and David C. Enloe, Sherman, addressed the Grayson County Medical Society, Sherman, June 2, on congenital syphilis and epidemic encephalitis, respectively.——Drs. Ivan A. Estes, Dallas, and Roland T. Travis, Jacksonville, addressed the Van Zandt County Medical Society, Canton, June 5, on "Indications and Technic of Cervical Cesarean Section" and "Intestinal Obstruction," respectively.

VIRGINIA

Hospital News.—Postgraduate clinics for Negro practitioners were given by the Medical College of Virginia, June 15-27, in St. Philip Hospital. Instruction was given in the fields of medicine, pediatrics, obstetrics and surgery as related to general practice.

Personal.—Dr. Emily Gardner, Franklin, recently received the Mary Putnam Jacobi fellowship awarded annually by the Medical Women's Association of New York City and is now studying clinical pediatrics in the hospitals of Europe. This fellowship was founded as a permanent tribute to the memory of Dr. Mary Putnam Jacobi, wife of Dr. Abraham Jacobi and a distinguished physician in her own right. She was professor of materia medica and therapeutics in the Woman's Medical College of the New York Infirmary for Women and Children and clinical lecturer on diseases of children in the New York Post-Graduate Medical School.

WISCONSIN

Society News.—Dr. Stafford McLean, New York, addressed a joint meeting of the Milwaukee Academy of Medicine and the Milwaukee Pediatric Society, June 16, on "Endemic Purpuric Bacteremia in Early Life and Diagnostic Value of Smears from Purpuric Lesions."——Drs. Ray C. Blankinship and Robin C. Buerki, Madison, addressed the Marinette-Florence County Medical Society, Marinette, July 9, on colitis and hospital management, respectively.

GENERAL

Study of Undulant Fever.—A study of undulant fever in the United States in 1929 and 1930 has recently been made by the U. S. Public Health Service as the beginning of an attempt to determine the seasonal prevalence of the disease. Dr. Hermon E. Hasseltine, who made the study, found 952 cases in 1929 and 1,385 in 1930. Iowa had the greatest number of cases in 1929, with 158, and New York, the greatest number in 1930, with 161. The peak was reached in September, 1929, but in 1930 the greatest number of cases occurred in July. Undulant fever is a reportable disease in thirty-two states, not reportable in seven, and nine states did not reply to the investigator's question on this point.

Society News.—Dr. Lee Wallace Dean, St. Louis, was elected president of the American Otological Society at its recent meeting at Briar Cliff, N. Y. Other officers elected are Drs. George L. Tobey, Jr., Boston, vice president; Thomas J. Harris, New York, secretary-treasurer.——Dr. George E. Shambaugh, Chicago, was elected president of the American Laryngological Association at the recent meeting in Atlantic City. Other officers are: Drs. Joseph B. Greene, Asheville, N. C., and Ebenezer Ross Faulkner, New York, vice presidents; George M. Coates, Philadelphia, secretary, and George Fetterolf, Philadelphia, treasurer.——The National Medical Association will meet in Atlanta, Ga., August 17-21.

Automobile Deaths in Four Weeks.—The U. S. Department of Commerce announces that, during the four weeks ended July 11, eighty-two large cities in the United States reported 686 deaths from automobile accidents as compared with 661 deaths during the four weeks ended July 12, 1930. Of the number for 1931, only 527 were the results of accidents within city limits. For the fifty-two week periods ended July 11, 1931, and July 12, 1930, the totals for the eighty-two cities were 9,080 and 8,928, respectively. These numbers represent identical death rates, 26 per hundred thousand of population, when calculated to only one decimal place, the real difference being 0.2 per cent. Nine cities reported no deaths from automobile accidents, in comparison with four for the corresponding period of 1930.

Award of the Remington Medal.—Ernest F. Cook, Pharm.M., of the Philadelphia College of Pharmacy and Science, was awarded the Remington Medal, it was announced, July 25. This medal is awarded annually by the New York branch of the American Pharmaceutical Association to the person "who has done most for American pharmacy during the preceding year, or during a longer period of outstanding activity and of fruitful achievement." The presentation of the medal will be made next fall when the meeting of the New York branch will be resumed. It was stated that Dr. Cook was selected because as chairman of the United States Pharmacopeia X Revision Committee, he maintained the prestige that has been attached to that internationally famed volume for several decades, and as an exemplar of high ideals in pharmacy has shed luster on the profession for many years. Dr. Cook is also chairman of the Revision Committee for the next Pharmacopeia.

Blind and Deaf-Mutes in the United States.—The U. S. Department of Commerce, bureau of the census, in its recently published bulletin on "The Blind and Deaf-Mutes in the United States: 1930," states that a total of 63,489 persons were reported as blind by census enumerators, and the ratio of blind to the general population, on the basis of returns from the 1930 census, to be 517 per million. A total of 57,084 persons were reported as deaf-mutes, the ratio of deaf-mutes to the general population being 465 per million in 1930. In addition to those reported by enumerators either as blind or as deaf-mutes, there were 1,942 persons reported in 1930 as being blind deaf-mutes. Of the individual states, New Mexico showed the highest ratio of blind (1,434 per million of general population) to the general population, while Wyoming showed the lowest rate (235). Kansas showed the highest ratio of deaf-mutes (624), while the second to the lowest ratio (266) was shown by Wyoming. The lowest ratio (242) was shown by the District of Columbia.

Study of Typhoid Fever Along the Ohio River.—A study to determine whether a relationship existed between the occurrence of occasional cases of typhoid and a public water supply under adequate sanitary control has recently been completed in six cities on the Ohio River by Dr. Milton V. Veldee, of the Stream Pollution Laboratory of the U. S. Public Health Service, Cincinnati. The six cities chosen were East Liverpool, Steubenville, Ironton and Portsmouth, Ohio, Wheeling, W. Va., and Ashland, Ky., all of which were using modern methods of artificial purification during 1927 and 1928, the years covered by the study. Of 177 cases reported for the two years in all the cities, 66 remained after deductions had been made for nonresidents brought into the cities for treatment, patients who acquired the disease elsewhere, cases in which the disease was not proved, and cases known to have been acquired through contact. Only 5 per cent of the population of the six cities was without the public water supply, but 19.7 per cent of the cases occurred among this group. Analysis and investigation proved that 92.5 per cent of the cases occurred in persons who either drank known polluted water or water of a suspicious or unknown character or went swimming, wading or playing in such waters. These facts strongly suggested that the sources of these infections were factors peculiar to travel, to poor sanitary surroundings and indifference to personal cleanliness, to the ingestion of polluted drinking waters from private sources, or to two or more of these factors combined. The investigators concluded, therefore, that there was no evidence that the public water supplies could have been the disseminating factor in these cases.

LATIN AMERICA

Public Health in El Salvador.—Approximately 164,000 persons, one tenth of the population of El Salvador, were vaccinated, most of them for the first time, during 1930, according to a report in the *Bulletin of the Pan American Union*. More than 50,000 persons were examined in the state hookworm dispensary and about 12,000 were found to have the disease. Through the efforts of the offices in charge of an antimalaria campaign, 12,155 stagnant pools and similar breeding places were cleared of mosquito larvae by the use of crude petroleum.

MEXICO

Public Welfare Institutions in Mexico City.—Twelve types of institutions and services are listed in a directory of public welfare institutions, recently published by the Bureau of Civic and Cultural Betterment in Mexico City to acquaint the residents of the federal district with the facilities of the district. Dispensaries and hospitals listed in the directory include five public welfare dispensaries, seven dispensaries for venereal disease, fourteen offices of the bureau of public health, eight hospitals, an insane asylum, the dispensary of the Association for the Prevention of Blindness and the Anti-Rabies Institute. Medical and social work among mothers and children is carried on by the National Child Welfare Association, the Maternity Home, five day nursery schools, four day nurseries and five infant hygiene centers.

FOREIGN

Society News.—Because of financial stress in Germany and Austria, the "Gesellschaft für Verdauungs- und Stoffwechselkrankheiten" has postponed its annual convention, which was to be held in September in Vienna, Austria, under the chairmanship of Professor Falta.

Change in Distribution of Yellow Fever.—Marked changes have occurred in the distribution of yellow fever since 1927, when the disease was at its height in Africa, according to reports gathered by the health section of the League of Nations. The focus of heaviest prevalence is reported to have

shifted from Africa to South America. Only two cases with one death were reported from the Gold Coast of Africa in 1930 and one fatal case from Nigeria. In 1926 an outbreak occurred in Brazil and after a year of light incidence the disease flared up again in 1928 and took a fresh impulse in 1929. During the latter year there were 613 cases with 362 deaths in the city of Rio de Janeiro. In 1930 the disease abated in Brazil but has increased again in 1931. The problem created by the development of commercial air transportation has led recently to proposals for stringent restrictions on air traffic. One of these is the interdiction of all air traffic between contaminated countries or even suspected countries with countries in which the disease is not found. The governments of the Philippines, British India, British Malaya and Australia have forbidden the introduction of the virus even for experimental purposes, pointing out that ample facilities for studying the disease exist in countries where it prevails.

Government Services

Changes of Station in the Navy

Rear Admiral Robert M. Kennedy, relieved from active duty and ordered to his home; Comdr. Reginald B. Henry, from the U. S. S. *Idaho* to the naval academy; Lieut. Comdr. James F. Hooker, from the U. S. S. *Lexington* to the naval dispensary, San Pedro, Calif.; Lieut. Asa G. Churchill, from the destroyer division, 12 battle force, to the naval hospital, San Diego, Calif.; Lieut. Comdr. William W. Hargrave, from the naval station, Tutuila, Samoa, to the Receiving Ship, San Francisco; Lieut. Comdr. Mathison J. Montgomery, from the U. S. S. *Salt Lake City* to the naval medical school, Washington, D. C.; Lieut. Navy F. X. Banvard, from the U. S. S. *Hannibal* to the naval hospital, Newport, R. I.; Lieut. John P. Brady, from the navy recruiting station, Minneapolis, to the U. S. S. *Hannibal*; Lieut. James F. Hays, from the naval station, Guam, to the Receiving Ship, San Francisco; Lieut. Rufus A. Schneiders, relieved from all active duty and ordered to his home; Lieut. Warren E. Klein, from naval medical school, Washington, D. C., to the naval station, Guam; Capt. Thurlow W. Reed, Lieut. Comdr. Earl C. Carr, Lieuts. Charles H. Bitner, Caldwell J. Stuart and Robert Faust, all detached from the naval station, St. Thomas, Virgin Islands, and ordered to duty at the nearest receiving station in the United States; Lieut. Comdr. Leo L. Davis, relieved from active duty and ordered to his home.

Army Personals

Lieuts. Winship Caldwell Callaghan and William Weaver Nichol, medical reserve corps, ordered to active duty at Letterman General Hospital, San Francisco; Capt. John H. Dawson, having been found by an army retiring board incapacitated for further service on account of disability incident thereto, his retirement is announced; Capt. Rawley E. Chambers, relieved at Fort Benjamin Harrison, Ind., and will sail about Jan. 7, 1932, for the Panama Canal Department; Capt. Don Longfellow, relieved from duty with the Governor of the Panama Canal Zone and assigned at Fitzsimons General Hospital, Denver; Capt. Arthur J. Redland, relieved at Fitzsimons General Hospital, Denver, and assigned to duty with the Governor of the Panama Canal Zone; Major Raymond W. Whittier, assigned to station hospital, Fort Sam Houston, Texas, following the completion of his present tour of foreign service in the Panama Canal Department.

Colonel Delaney Appointed Assistant to Surgeon General

Col. Matthew A. Delaney, now at headquarters of the fifth corps area, Fort Hayes, Columbus, Ohio, has been appointed assistant to Surg. Gen. Robert U. Patterson, with the rank of brigadier general, effective Jan. 1, 1932. Colonel Delaney succeeds Brig. Gen. Carl R. Darnall, who will retire for age, December 31. Colonel Delaney graduated from the University of Pennsylvania School of Medicine in 1898. He has served in the Philippines and in the Hawaiian Islands. During the World War he was in charge of base hospital number 10 and was later detailed as liaison officer with the British War Office. He was formerly assistant executive in the surgeon general's office. He received the Distinguished Service Medal in recognition of efficient operation of his unit in France, and was decorated by the British government.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 13, 1931.

Carriers of Disease in Psychopathic Hospitals

A subcommittee of the Royal Medico-Psychological Society has made an important report on the carriers of typhoid, dysentery and diphtheria in psychopathic hospitals, based on a questionnaire circulated to psychopathic hospitals, to which seventy-three replies were received. Of these, thirty-nine were negative, with a remote history of carriers in two. Twenty-eight hospitals recorded carriers and six more suspected carriers. One hospital recorded carriers of typhoid, dysentery and diphtheria; ten hospitals, carriers of typhoid and dysentery, and three suspected such carriers. Twelve hospitals recorded typhoid carriers and three more suspected such carriers. The infection in one proved and one suspected case was paratyphoid B. Forty-eight typhoid carriers were specified. Three hospitals recorded dysentery carriers, in addition to ten which recorded both dysentery and typhoid carriers. Four hospitals indicated diphtheria infection, of which two recorded three carriers.

The treatment for typhoid carriers was segregation in combination with other methods. In five hospitals, segregation alone was relied on. Seventeen of twenty-eight hospitals having or suspecting carriers used vaccine containing typhoid, paratyphoid A and paratyphoid B bacteria. This was given variously to the carriers or to suspects or to all residents. In only one hospital was the cure of a carrier by vaccines recorded. A notable result from prophylactic vaccination was reported by one hospital where typhoid was endemic and where a complete bacteriologic review was impracticable: the mortality was reduced from 28 per cent to 0. In three hospitals cholecystectomy and in one cholecystotomy was performed on carriers. Eight cases of cholecystectomy were recorded at the North Riding Hospital (Yorkshire); five of the carriers were cured, one was improved, one was not improved and one died.

For dysentery, vaccines and serum were used; in three hospitals vaccines were particularly recommended, but one observer considered serum of little value. Segregation was generally adopted.

Of three diphtheria carriers, one died, one was isolated and a third improved, a sinus infection being remedied.

The general conclusion is that typhoid carriers receive the most attention, probably owing to the more fatal results and need for greater care in detection. It is noteworthy that cholecystectomy seems to hold out the best hope of cure.

Wastage of Benefit Funds Under Medical Socialism

In an address to the National Association of Trade Union Approved Societies, Sir Walter Kinnear, controller of the national health insurance department of the ministry of health, warned the societies that they would have to reduce their benefits. Referring to the increased claims for sickness and disablement benefit, he said it would be foolish to suggest that there was malingering on a wide scale and that it would be equally foolish to suggest that insurance physicians deliberately lowered their criterion of incapacity under the act. But the fact remained that a not insubstantial proportion of the insured were claiming and getting benefit to which they had no right. A year ago a group of societies submitted for examination a proportion of all their members in receipt of benefit. It was found on the most conservative calculation that 12 per cent of these were capable of work. The money obtained by them amounted to nearly $12,500,000. What a splendid specialist and consulting service they could have if that money had been saved! The proportion of men ceasing benefit as a result of the reference was 9.8, of unmarried women 14.2 and of married women 16 per

cent. It was difficult to resist the conclusion that the increase in claims had been mainly among persons who were not incapable of work. Sir Walter Kinnear urged the need of securing a better standard in the issue of medical certificates of incapacity and the importance of an efficient system of sickness visitation. There was indisputable evidence that quite a proportion of physicians had found themselves unable to certify strictly in accordance with their medical judgment for fear of losing patients. The majority were doing their duty faithfully.

The Detection of Smallpox

The procedure in doubtful cases of smallpox has given rise to difficulty. The London County Council recently decided that admission to its smallpox receiving station at Rotherhithe, where cases are collected previous to transport to the smallpox hospital, should be limited to those in which a medical certificate had been given that the patient was suffering from the disease. This drew protests from several of the metropolitan borough councils, pointing out that in their congested areas it was most undesirable that persons presenting symptoms that suggested smallpox should be obliged to remain at home until the rash developed sufficiently for a definite diagnosis. The council drew the attention of the boroughs to the fact that an expert diagnostic service had been provided, of which the boroughs were not making full use. This work was at one time performed by an expert who did nothing else, but now it has been taken over by a panel of medical superintendents of the council's fever hospitals. The council also pointed out that precautions had to be taken to insure that patients who may be found not suffering from smallpox are not exposed to the risk of contracting it at the receiving station. During 1930, 547 patients were sent there without a clear certificate of smallpox, of whom 94 proved not to be suffering from the disease. However, in view of the protests the council has modified its regulations, as follows: Patients suspected of suffering from smallpox, but not so certified, will be admitted to the receiving station for observation on the following conditions: 1. The borough health officer has called in consultation one of the council's experts. 2. The patient has been examined by the health officer, the expert and the general physician (if one has been called in) and they have all been unable to say definitely that the case is one of smallpox, although there is strong presumptive evidence. 3. The application for admission has been made by the borough health officer. 4. The arrangement whereby the borough health officer obtains information each evening from the council as to the final diagnosis continues.

Examination in Great Britain of Prospective Emigrants to Canada

The immigration medical service of Canada has sent instructions to the physicians who, under a roster scheme, examine, in the British isles, prospective emigrants to Canada. With few exceptions such examination was made compulsory before embarkation in February, 1928. The object is primarily to advise the department of immigration as to the mental and physical fitness of the applicant and secondarily to protect his interests as well as those of the traveling public and the new community. Years of experience have convinced the medical officers of the Canadian department of national health that it is unkind to precipitate into the general labor market or the pioneering life of this new country persons, from the comparatively sheltered life in the British Isles, who are below a high average of mental or physical power. For all newcomers the marked changes in climate, such as extremes in temperature, excessive sunshine, high altitude and thin, dry atmosphere, are trying to the nervous system. The isolation in outlying districts, and the change of food, cooking and dwellings, social life, customs, methods of doing work and business tend to produce a period of homesickness, which may be disabling. It may be disappointing to find that a better living can be obtained in the new country only by harder work than in the old. The release from the restrictions of a crowded community may remove restraints and prove too much for those who are lacking in moral control.

Therefore examiners should try to detect not only obvious physical or mental defects but also the borderline between sanity and insanity—those with defective judgment, instability of the nervous system, and emotional hypersentiveness; also those who suffer from epilepsy, latent syphilis, chronic or recurrent conditions, such as tuberculosis, rheumatism, bronchitis, renal, gastric or arterial disease, and skin diseases producing either disability or a loathsome appearance. Rejection at the port of landing of physically or mentally defective persons, or the sending back of those who, before qualifying for full citizenship, become a charge on the country, are hardships which make the position on return worse than that before emigrating. The Canadian government feels that a close and friendly cooperation between the British examiners and the Canadian immigration medical officers will avoid these misfortunes. The former, by submitting the report of a careful examination to the latter, will enable those with a knowledge of Canadian conditions and specially trained in immigration work to give a reliable medical opinion as to the advisability of the applicant's migration to Canada.

Death of the Bacteriologist Alfred T. MacConkey

Dr. A. T. MacConkey, known to bacteriologists all over the world by his bile salt medium, has died at the age of 70. Educated at Caius College, Cambridge, he graduated with honors in the natural science tripos. He then proceeded to Guy's Hospital, from which he settled in general practice. After an attack of influenza and nervous breakdown he decided to abandon general practice for bacteriology. He was appointed bacteriologist to the Thompson-Yates laboratories in Liverpool and later assistant bacteriologist to the royal commission on sewage disposal. He published important researches on the classification of the lactose-fermenting bacteria of intestinal origin and their significance in the contamination of water, milk and foods. His bile salt medium, by inhibiting the growth of bacteria not derived from the intestine, enabled the typhoid-dysentery group to be separated and proved of great value in the estimation of coliform bacteria in the routine examination of water supplies. He used bile salt lactose agar to isolate the typhoid and colon bacillus. Afterward the addition of neutral red as a differential color indicator for colonies of pathogenic bacteria that do not ferment lactose was suggested by Grunbaum and Hume. In 1901 he joined the staff of the Lister Institute, London, and was soon transferred to the serum department, of which he became the head in 1906. He did much to develop the methods for refining and concentrating antitoxic serums. During the war he did important work on antitetanic serum.

New Charter for Hospital Nurses and Patients

At the national conference of labor women, held at Blackpool and attended by 800 delegates, a new charter for hospital nurses and patients drawn up by a joint committee of industrial women's organizations and the public health advisory committee of the labor party, was unanimously adopted. It demands: 1. More nurses and an eight hour day for them. 2. No more waking of patients at 4 or 5 in the morning, which, as shown in previous letters, is already being abandoned. 3. Better beds and better food. 4. Greater attention to the welfare of patients generally. 5. Public control of the hospital system, financed from public funds. Speeches were made against the "undignified" system of hospitals begging for support from the public. The system of paying patients which makes a distinction between those who can afford to pay for hospital treatment and those who cannot should be abolished. Lady almoners, who inquire

into the capacity of patients to pay, should be abolished. They ask "extremely impertinent and unnecessary questions." The demands, as far as the patients are concerned, might be summed as more for nothing. The economics of hospitals received as little consideration as national economics do from the labor party.

PARIS

(From Our Regular Correspondent)

June 10, 1931.

Increase in the Consumption of Alcohol

The recent annual assembly of the Ligue nationale contre l'alcoolisme gave its general secretary, Dr. Riémain, an opportunity to present statistics on the consumption of alcohol in France that are disquieting. The consumption of alcohol had frankly diminished during the years that immediately followed the war. It is now increasing in all classes of society. The consumption of alcohol, evaluated on the basis of alcohol 100 per cent pure, which in 1927 was 892,719 hectoliters, increased to 1,032,295 hectoliters in 1928, to 1,083,390 in 1929, and to 1,164,274 hectoliters in 1930. The consumption of wine with an average alcohol content of 10 per cent was 44,308,828 hectoliters during the season of 1926-1927, 41,411,825 in 1927-1928, 46,177,395 in 1928-1929 and 49,908,489 hectoliters in 1929-1930. These statistics include only the wines on which the government tax was collected. In addition, there is a large amount consumed that is not taxed and thus does not enter into the statistics. This is due to the peculiar privilege of the so-called *bouilleurs de cru*, or the consumers of alcoholic beverages produced on their own lands, the number of which is increasing every year. The 10 liters of pure alcohol, exempt from all duties, allowed each of the two million *bouilleurs de cru* represents only a small part of the alcoholization provoked by this monstrous privilege. No one knows what the total consumption of untaxed wine amounts to. Everywhere the vine growers board their workmen, and they usually give them all the wine they wish to drink. The consumption for each workman amounts to from 2 to 3 liters for each meal, which certainly must have a toxic effect on them, although the enormous amount thus consumed, since it is not sold, does not serve to keep down the overproduction of wine in France, Algeria and Tunisia. A bill is now before parliament looking toward the restriction of wine production, which has developed beyond all needs. But the bill has encountered the opposition of the public, which understands that the real objective is to maintain the high price of wine and alcohol. The law is demanded chiefly by the large wine merchants, who complain that they cannot dispose of their stock. Riémain, in his report, emphasizes the great efforts put forth by the Ligue contre l'alcoolisme in the form of lectures, distribution of tracts and the exhibition of motion picture films. But they are opposed by the public press, which derives a good part of its income from the advertisements of wine and liquor merchants. In the advertising contracts between these parties there is always a clause stipulating that the journal shall not take part in any antialcohol campaign, and that if it does the contract shall become null and void. Riémain hopes to find a solution of the problem in a crusade in favor of the consumption of fruit juices from which the alcohol has been extracted.

Time of Appearance of Tabes and Dementia Paralytica

At a recent meeting of the Société des médecins des hôpitaux de Paris, a discussion was held on the relations between the time of appearance of tabes and dementia paralytica, on the one hand, and the initial treatment of syphilis. Formerly it was thought that neurosyphilis developed chiefly in patients inadequately treated at the beginning of their syphilitic infection, and that the peculiar personal conditions and the mode of living of the patient favored the development. Later the opinion was reached that neurosyphilis was more frequent when syphilis had been inadequately treated at the start than when it had not been treated at all. Sezary and Rondinesco supported this view before the society. They studied the action of various factors on the period of time that elapsed between the date of the syphilitic infection and the first symptoms of these nervous disorders. From their research it appeared that alcoholism, mental overwork and sex influences did not play the rôle that is usually assigned to them. The age of the patient at the time of infection is to be considered, for the incubation of neurosyphilis is shorter, the later in life syphilis is contracted. But it is the action of the treatment that is decisive, or, more exactly, the manner in which treatment is administered. Sezary found that tabes and dementia paralytica appeared after about seventeen to twenty years in syphilitic persons who had not received treatment; in about fifteen years in syphilitic patients who had received little treatment, and in about nine or ten years in those who had received considerable though not adequate treatment. Thus, the nervous complication appears to have developed so much earlier, the more energetic the early treatment was, provided it was still inadequate. The nervous complication was also earlier after the more energetic arsphenamine treatment (nine years, on the average) than after the mercurial treatment (fifteen years). Adequate arsenical treatment, however, or, better still, treatment with arsenicals and bismuth combined protects the patient against neurosyphilis. Thus, it is not the arsphenamine that should be incriminated but the inadequacy of the treatment administered. It appears that treatment which does not destroy radically the spirochete causes it to take on a more resistant form, with a slow evolution and characterized rather by nervous localizations. Several members of the society, after presentation of the paper, took part in the discussion. Flandin stated that if the late visceral manifestations were studied in like manner, the same conclusions would be reached. The fault lies first with the patients, who often lack perseverance, and secondly with the physicians, who employ too small doses and do not continue the treatment long enough. Tzanck also was of the opinion that it is better not to treat syphilis at all than to treat it inadequately. He emphasized likewise the great importance of continued supervision of patients dismissed from the hospital, since, through the hospital consultations, it is possible to apply coercive measures to patients who neglect their treatment. Jausion expressed the view that neurosyphilis is more frequent in patients who had, in the beginning, only a minimum of mucocutaneous manifestations, but this view was combated by Sezary, who contended that the facts, as he had observed them, would not support such an opinion.

Kala-Azar in a Child in Paris

Kala-azar is commonly unknown throughout France. It is a disease of the Mediterranean shore, and French physicians observe it only in Tunisia. Furthermore, as the disease develops rather rapidly, it is exceptional for a patient, even during the incubation period, to be transported a long distance. Lereboullet, Chabrun and Baize presented recently before the Société médicale des hôpitaux a child, aged 6, who had been admitted to the hospice des enfants assistés on account of a typical kala-azar infection, with an enlarged spleen, remittent fever and anemia. The disease had developed at La Rochelle and at Saint-Denis but had been contracted on the Mediterranean shore. As the result of treatment with biweekly intramuscular injections of a compound with an antimony base, the child is on the way to recovery and no longer presents either fever or anemia, while the spleen has become nearly normal. The diagnosis based on puncture of the spleen was strengthened by the Gâté and Papacostas test (the formol-gel test applied to the blood serum, with opacification), which was frankly positive at the beginning of the disorder but became progressively negative. The child received by the intramuscular route, from December to April, more than 0.8 Gm. of antimony, a fairly large dose but which was well borne.

Pictures at the Rate of One Hundred Thousand per Second

At a recent session of the Academy of Sciences, Huguenard and Magnan presented an ultrarapid cinematograph that produces from 2,000 to 3,000 pictures per second. Since then, Koenigs has made known an apparatus that is still more rapid, as it enables the operator to follow phenomena that last only one hundred thousandth of a second. This apparatus, which utilizes the strobocinematograph of the Seguin brothers, is the result of researches by Labarthe, of the laboratory of physical mechanics at the Sorbonne. The model which was presented to the academy and which was operated in the main auditorium is the first realization of a frequency of 50,000. The duration of the exposure for each picture is from one thousandth to one millionth of a second. Such great rapidity is secured with the flash of a neon tube subjected to a tension of 16,000 volts and consequently rich in actinic radiations. This tube is excited by the discharge from a condenser. The pictures are taken on a film revolving on a reel at great speed and kept smooth by the centrifugal force. The ultracinematograph will enable the operator to analyze vibrations, percussions, the phenomena of movement in fluids, and the like.

Prevention of Heart Complications in Acute Rheumatism

Laubry and Jaubert discussed recently before the Société des médecins des hôpitaux de Paris prophylaxis of infectious heart complications in acute rheumatism, which led Mr. Tzanck to make an interesting contribution to the subject. The treatment of infectious endocarditis that follows attacks of acute rheumatism has not usually been especially effective and often does not prevent the fatal issue or the final sclerous lesions that shorten the life of the patient. According to Laubry and Jaubert, preventive medication with salicylic acid gives only deceptive results. The first experiments, carried out by Routier and Thireloix, consisted in vaccinating rheumatic subjects against attacks of rheumatism with the aid of a streptococcus anatoxin prepared from the filtrate of a scarlet fever culture. The vaccinations appear to have been effective against recurrences of rheumatism. Their results were reported by the authors to the Société de biologie. The experiments are being repeated elsewhere.

The American Children's Hospital at Reims

The American Memorial Hospital at Reims celebrated recently its seventh anniversary. Miss Edith Bang of Boston, the chairman of the hospital administration, came to Reims, as she does every year, to inspect the hospital and to confer with the directress, Dr. Marie Lefort. The hospital in its present form has twelve pavilions, but it is being enlarged and in two years it will have eighteen pavilions. There are at present 125 beds. With the aid of this hospital, Reims, which was almost completely destroyed during the war, is gradually regaining its position as a chief medical center of eastern France.

BERLIN

(From Our Regular Correspondent)

June 15, 1931.

The Physician and the Public Press

At the invitation of the Verein Berliner Journalisten, Dr. Curt Kayser, the director of the press service of the federal commission for popular education in hygiene, delivered an address on "The Physician and the Public Press." The physician today regards it as his task and duty not only to care for the sick and to help them with good advice but also to tell those who are well how to preserve their health. Great is the ignorance of the masses with regard to hygiene, and it would be well if every newspaper, along with its sport colum (for sport is a handmaid of hygiene), would introduce a health column. This need has been met by many city dailies, who have their own medical editors. But the promulgation of hygienic knowledge is especially important also for the small-town and the rural population. In order to accomplish here all that is needed, the physician and the public press must come to an understanding as to their respective duties. It is not the duty of the press to advertise the medical profession or to publish sensational announcements in regard to new and not fully tried therapeutic methods, since such premature announcements all too frequently cause unrest and disappointment among the general public. Nor should the press, by devices of all kinds, lead the public to practice self treatment. It is the duty of the press, with the aid of the medical profession, to give to the layman the assured facts of medical research, especially in the field of hygiene. The press must be careful not to overdo the matter, in order not to produce hypochondriacs. Prophylaxis strives to perform productive service and to create economic values. Although the value of supplying popular instruction in hygiene may not be so easily expressible in exact figures, the decline in tuberculosis mortality, which, in the prewar period, was 24 per 10,000 of population and is now only 8.1, and likewise the drop in infant mortality, and other figures, furnish unequivocal evidence. To be sure, the influence of the instruction given by the press of the country is not the only factor that has contributed to this remarkable result. The medical profession has collaborated in a hearty manner in the movement and is entitled to a large share of the credit. In order to furnish suitable material to the newspapers who had no medical editor nor any regular contributors on medical subjects, the federal commission for popular education in hygiene, more than four years ago, established a press service of its own, which supplied newspapers with special correspondence on medical subjects of a popular nature. Viewing the question broadly, the mutual labor of physician and public press in the field of popular education in hygiene must not serve any particular persons and must avoid everything sensational, its sole purpose being the preservation of our most valuable possession—health.

Outdoor Recreation for Weakly Children

Addressing the Berlin Society of Internal Medicine and Pediatrics, Dr. Tugendreich, of the Infant Welfare Department, and Dr. Werner Gottstein, school physician, spoke on the problems and the development of outdoor recreation for weakly and underprivileged children. A society whose purpose it is to provide such recreation for children has existed since 1876. The condition requiring relaxation, quiet and the milder forms of recreation is a half-way stage between health and sickness. The condition is characterized further by easy fatigability and rather slow recovery from fatigue, with the absence of other pathologic signs. The opportunity afforded to rest and recuperate restores, for a considerable period at least, the capacity for work. Through the institution of a more rational mode of living—if possible, combined with a change of climite, this goal can usually be attained in from six to eight weeks. A state of more or less exhaustion finds its expression in the child in a lowering of his capacity and performance in physical and mental fields of activity. These conditions in the child should be sharply distinguished from the consistent neglect in the performance of physical and mental tasks peculiar to the juvenile age. Constitutional weaklings receive, however, little benefit from such treatment. Children who are endangered by a tuberculous milieu, rachitic children and children with cardiac and renal disorders are not suitable subjects for such vacation treatment. The diagnosis of "exhaustion" can be reached only by observation of a child over a considerable period. The selection of children to receive such treatment should be left to the school physicians and to the physicians of the welfare department, who alone have sufficient knowledge of the social conditions affecting the child. The primary selection of children must be made on the basis of local conditions; but it is desirable to have the final examination on which admission is based made

at some center, in order that uniform criteria may be applied. The local provision of recreation facilities, in the form of playgrounds, hikes and the like, comes more under the head of prophylaxis. If children are to be sent to a more distant point, it is desirable to provide, if possible, a change of climate. Sometimes sending children to more distant points is desirable in order to get them away from the influence of the parents. In place of day recreation centers, well organized kindergartens might serve better for young children. Much more should be done to provide amusement and recreation for young children, for whom, in most cities, there are no provisions made, in spite of the fact that for children of preschool age controlled play and recreation are often more important than for older children. Young children should, however, be carefully examined in order to determine just what games and forms of recreation are suitable for them. There are as yet no reliable statistics as to the effects of providing for children of various ages the rest, change and recreation that they need. Often the good effects wear off within a few weeks after their return home. Whether after-control would be helpful and feasible remains to be seen.

Attempts have been made to determine the effects of such outings. Estimation of the increase in weight is an uncertain criterion, since children who are naturally lean and thin are selected as most in need of an outing. No particular evidence for improvement in the rate of growth has been discovered. Nor do the degree of susceptibility to infection, the total blood volume and the physical capacity furnish a criterion by which to judge. On the other hand, the rhythm of their motions after an outing is often changed for the better. An outing cannot be expected to be beneficial unless it takes account of the natural propensities of the normal child. It has been observed that it is chiefly the children who are mentally inferior who fail to adapt themselves readily to the new environment. Children enjoy themselves often better in a vacation camp near by, if it is well organized and well managed, than in an otherwise more favored climatic resort under poor management. Therefore, in the choice of a camp, the organization is more important than the location. Providing outings is only a part of the whole scheme the purpose of which is to fit the child for the future tasks of life.

Industrial Accidents, and the Determination of Degree of Disability

The trade unions have presented to the federal minister of the interior a petition in which the request is made that greater attention be paid to the training of physicians in medicine pertaining to industrial accidents and in the determination of the degree of disability thereby incurred. The demand is not for the training of physicians who shall make the medicine of industrial accidents their specialty, but rather that the future general practitioner, during his medical studies, shall receive adequate training in this special branch of medicine; furthermore, the suggestion is given that a special chair for the surgery of industrial accidents be created, together with a special center for that type of surgery. In keeping with these suggestions, roentgenology, the psychology of the determination of degrees of disability, psychotherapy and legal medicine, so far as these concern the general practitioner, should be made obligatory academic subjects and should be covered in the final examinations.

Low Incidence of Smallpox

In the three years ending with 1930 there were only two mild cases of smallpox each year in Germany. The four cases occurring in 1929 and 1930 developed in Prussia, and they probably were brought in from foreign countries—either from the Netherlands, where, in 1929, there were 700 cases, or across the eastern frontier from regions where smallpox is still common. This low incidence proves the value of compulsory vaccination. In countries in which vaccination is not compulsory or is not enforced the scourge continues; for example, England and Wales, which, in 1929, reported 1,000 cases with 39 deaths.

The Health of School Children

The Berliner Verein für Schulgesundheitspflege, which was founded thirty years ago, has resumed its sessions, now that the general introduction of full time school physicians has been carried out in Greater Berlin. At the recent meeting, the chairman, Professor von Drigalski, *stadtmedizinalrat*, spoke on the essential biologic requirements of the air of schools and hospitals. For a long time it was held that, through the gathering of many persons in closed rooms, changes in the air take place that are injurious. Especially carbon dioxide was incriminated. Flügge has shown, however, that the amount of carbon dioxide must exceed 0.1 per cent and the temperature must be above 20 C. (68 F.) in order to justify the statement that the air is bad. The direct cause, however, is not the carbon dioxide but the vapors. It is the vapors and the excessive heat that cause dizziness and lessening of capacity. He contends that the air in the schoolroom cannot be too dry. Experiments have shown that the daylight in the center of Berlin is usually capable of weakening pathogenic bacteria and of gradually killing them in large quantities. The deduction is that school and hospital rooms should open toward the sunny side. The windows should be arranged so that, when the weather is favorable, the closed room can be readily transformed into a half-open rest-room or veranda. The light should be allowed to flood the room as much as possible and, if that is done, special and expensive glass that is permeable by ultraviolet rays will not be needed. In place of gay colors that destroy the rays of biologic value, light and white colors should be used in the rooms.

Prof. Otto Warburg Honored

For his researches on the nature of respiration and on the biology of the cancer cell, Prof. Otto Warburg, the director of the Kaiser-Wilhelm-Institut in Dahlem, near Berlin, was awarded recently, by the faculty of medicine of Würzburg, the prize established by the eminent ophthalmologist of Milwaukee, Dr. Josef Schneider, together with a gold medal.

NETHERLANDS

(From Our Regular Correspondent)

May 21, 1931.

Poliomyelitis in the Netherlands

Dr. Josephus Jitta has submitted to the International Bureau of Public Health a communication on poliomyelitis in the Netherlands in 1930. He brings out several interesting points. The incidence during the summer months was the greatest ever recorded for that season. The distribution of the disease over the country was irregular. There appears to be no evidence of a geographic transmission of the disease. The provinces with the highest incidence in 1930 were not the ones most affected the previous year. It was significant also that children under 4 years of age were the ones chiefly affected (71.3 per cent of the cases). The age groups 5 to 9 comprised only 19.2 per cent of the cases. By reason of this observation, it did not become necessary to close the schools even in the regions particularly menaced. As to treatment, there was no great difficulty in procuring convalescents' serum, owing to the fact that so large a percentage of the patients were admitted to the hospitals. It is not yet possible to state definitely what the effects of this treatment were; but it appears that in the cases in which the disease assumed a grave nature from the start the treatment did not exert any influence. But if the first onset of the disease had been overcome, paralysis appeared less frequently and under a less grave form in the patients so treated than in those who did not benefit from such serotherapy. The percentage of mortality has greatly diminished from year to year—at least, apparently. The mortality rate was 21 per cent in 1928; 16 per cent in 1929; in 1930, up to September 15, the mortality was only 7 per cent. It should be borne in mind, however, that formerly—especially in 1928—only the grave cases were notified. The same thing is

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true of 1929, although to a less extent. In 1930, however, it is thought that a larger proportion of the cases were notified and that more of the mild and abortive cases were included. Seven per cent of mortality is probably near to an accurate statement.

The Congress of the Green Cross

The third Congress of the Green Cross was held at Utrecht, Sept. 25-27, 1930, under the chairmanship of T. J. Verschuur, minister of industry and labor. The first speaker, Dr. Scheltema, professor at the University of Groningen, discussed the past, the present and the future of instruction and practice in pediatrics. He urged that better care be taken of the children in order that one might attain, as nearly as possible, the ideal of "death only among the aged." Professor De Snoo, of the University of Utrecht, spoke on the subject of hygiene before and after the onset of pregnancy. In his opinion, preventive measures would diminish the percentage of stillbirths and the number of women who die as the result of childbirth. Dr. Gorter spoke on the place that preventive medicine should occupy in higher instruction.

Health of Government Workers in Western Java

In the *Geneeskundig tijdschrift voor Nederlandsch Indië*, Dr. C. W. F. Winckel discusses various diseases of government workers in western Java on the basis of official data contained in 2,500 certificates issued in that region from January, 1927, to October, 1929. Examination of the certificates reveals that: 1. The visé of the health officer is required in case of absence on account of sickness for more than two weeks. 2. Government workers are usually men in the prime of life. 3. The European government workers hold fixed jobs and have all been examined, whereas the majority of the natives have not been examined. Winckel found further that: 1. Of those who reported sick, about 10 per cent had some contagious abdominal disease. 2. Nearly 13 per cent had malaria; blackwater fever affected only Europeans. 3. Tuberculosis has about the same importance as malaria; it affects in its different forms 11.67 per cent. The number of natives affected with tuberculosis is twice as high as that of Europeans. 4. Twelve per cent had some venereal disease, while 5.8 per cent were suffering from syphilis and its sequels. 5. Tumors are not common. 6. Beriberi is confined almost exclusively to the natives; tropical ulcers are limited to the Europeans, and diabetes affects chiefly Europeans. 7. There was 11.5 per cent of functional neuroses, chiefly in Europeans. 8. Trachoma occurred principally in the natives. 9. Appendicitis is essentially a disease of Europeans; cirrhosis of the liver is found more particularly in the natives. 10. The number of diseases of the female genitalia was small (1.16 per cent), but if one includes the certificates of women under observation the proportion becomes 9.6 per cent in Europeans and 13 per cent in the natives employed by the government. The five principal causes of absence on account of illness were, then: malaria, 12.7 per cent; venereal diseases, 11.74 per cent; tuberculosis, 11.67 per cent; neurasthenia, 11.5 per cent, and contagious abdominal diseases, 9.8 per cent. This enumeration shows what an important factor infectious disease is still in the pathology of the tropical regions.

Suicide in the Netherlands

To the October issue of *Archivio di antropologia criminale, psichiatria e medicina legale*, Dr. Gargas, privatdozent at the University of Amsterdam, contributes an article on suicide in the Netherlands, which merits attention. The writer brings out the peculiarities that differentiate suicide in the Netherlands from that in other countries, utilizing for that purpose statistical data supplied by the government, together with statistics derived from judicial reports. The peculiarities may be summed up thus:

1. Whereas, in most countries, the number of suicides is in direct relation to the density of the population, the large cities presenting much higher figures than the rural districts, it is just the reverse in the Netherlands. During the period from 1911 to 1920, the rate was 6.7 per hundred thousand of population in the large cities of the Netherlands, while in the cities with less than 5,000 inhabitants, including the rural districts, the rate was 7.1 per hundred thousand. As suicide in the rural districts affects chiefly aged persons, Gargas considers the chief cause to be a sense of uselessness from the economic point of view, among the rural population, and since, of all the provinces, Friesland is the most affected, he concludes that unfavorable family relationships and questions involving the rights of succession play a big part. It may be added that aged persons receive in the cities better care than they do in the rural districts.

2. Whereas, in other countries, marriage has a favorable influence on the number of suicides, this influence does not appear to be manifest in the Netherlands. During the period 1916 to 1925, the number of suicides was much greater among married persons than among the unmarried, and also much greater among men than among women.

3. The statistics show that in the other countries of Europe the largest number of suicides occurs among the 20 to 64 age groups. The statistics for Amsterdam are in agreement with this statement. In the remaining sections of the country, the suicides are, for the most part, past 80 years of age.

4. Whereas Rost and Wagner found that the number of suicides is the smallest among industrial workers, their number is particularly high in our country (from 23 to 25 per cent), which indicates, in Gargas' opinion, that their situation is less favorable comparatively than that of the industrial workers in other countries.

5. Although, in most countries, the percentage of suicides in prison is much greater than among the population outside, the number of such suicides is especially small in the Netherlands. Sometimes whole years pass without a single suicide occurring in the prisons. The writer concludes that this favorable difference is due to the fact that prisoners in the Netherlands receive more humane treatment than elsewhere.

BUDAPEST

(From Our Regular Correspondent)

June 27, 1931.

Prevention of Physical and Mental Defects

At a meeting of the National Public Health Association, Dr. Leopold Szondi discussed how physical and mental backwardness can be prevented if treated before the age of maturity. He stated that teachers and parents are in error in dealing with backward children when they simply say that in time they will outgrow their defects. Thus with folded arms they allow years to pass and the children remain handicapped, although their defects might have been improved, if cared for in time. The intervention of the physician is necessary in three cases: (1) in disturbances of growth, (2) in disturbances of sexual maturity, and (3) in manifestations of disorders of mental development.

As regards disturbances of growth, it is an old observation that, in private practice, physicians find that the majority of children brought for examination exceed the average height or, at least, reach it, while children seen at the outpatient department of hospitals are frequently far below the average. This is easily understood, for the better class of people can give more care to their bodily welfare than the poor people. Disturbances of growth can be traced back to external and internal circumstances; for instance, climate is a factor; in the colder climates people grow higher than in warmer territories. Housing is an important element and the quality of foods is of great importance. The question is, Which is to be preferred: early or late maturity? The response of the physician to this question is that there is not much good in excessively quick progress. This is shown by the experience that quick sexual maturity involves early senescence. At present, when the problem of rejuvenation

occupies the minds of men, this question is of especial importance. Rejuvenation should be begun in the juvenile age by the postponement of puberty. The youth of those men whose puberty has been delayed lasts longer, and they reach senescence much later.

As regards mental disturbances, in the first years of life the brain develops in direct relation with the growth of its capsule and that of the skull. Medical science for a long time held the view that the size of the brain is determined by the growth of the skull. It is known today that the contrary is true, for the development of the brain regulates the growth of the skull. It is to be regretted that in many cases of backward children the parents do not know that their children need medical supervision. It should be the first task of school physicians to call the attention of parents to this fact because the development of physical and mental defects can often be prevented.

Hypersensitiveness to Metal Coins

At a meeting of the Hungarian Dermatologic Society, Stephan Rothman, professor at the University of Giessen, Germany, reported an obstinate case of eczema that affected the hands, underarms, shoulders and neck. The customary therapeutic methods were of no avail. The localization of the eczema on the bare parts of the body suggested that the process was brought about by the detrimental effect of some external agent. The patient stated that he is employed by the Budapest City Tramway Company as a coin counter, where he counts silver, nickel and copper coins all day. Rothman considered the possibility of the detrimental effects of the coins and made a functional skin test, placing on the skin of the back on bloodlessly scarified areas carefully cleaned silver, nickel and copper coins, which he covered with gutta-percha paper and fixed with adhesive plaster. For a control, a fourth scarified area was covered with gutta-percha and adhesive plaster only. The result was read in twenty-four hours. At the site of the nickel coin there was a strong tumescence with an erythema, the size of a bean, and on the site of the silver and copper coins there were inflammatory foci the size of a pea. The control test was negative. Next day he made a functional skin test with silver nitrate and copper sulphate solutions (1:10,000) and used, as a control, distilled water. On the respective sites the reaction was slightly stronger than on the sites of the metal coins. The distilled water caused no change whatever. He performed the same tests on a healthy subject, with a negative result. He advised the patient to appeal to his directors for different work and the company granted the request. Four weeks subsequently he was quite cured. According to Rothman this case occupies a special position in the large group of external sensitizing agents, since only those minute quantities of metal which became dissolved in contact with the skin produced the lesions. He thinks that an important element in this process was the acidity of the skin surface.

CAPE TOWN

(From Our Regular Correspondent)

June 19, 1931.

Poisoning by Contaminated Wheat

Some interest has been aroused by the freely reported cases of wheat poisoning that have been published in the lay press. Four patients have been admitted to the hospital, and one of them died. The department of public health and the university authorities have undertaken an investigation but so far nothing has been published. The four patients are European adults, resident on a farm in the Clanwilliam district in the Cape Province, a district that has long been renowned for its wheat and its oranges. The Clanwilliam district was a happy hunting ground for the botanists Drege, Zonder and Schlechter, who discovered many new species here. There are thousands of varieties of flowering plants on these farms. Among many of the local plants which have a reputation for toxicity are the curious fleshy mesembryanthemums, with one or two leaves, which contain exceedingly powerful narcotic poisonous principles, and alkaloids which are said to be analogous to curare. The four patients now in the hospital are suffering from ascites, with enlargement of the liver. There is no sign of jaundice, and no cutaneous signs have been observed. The patients do not complain of pain. The ascites was noticed weeks ago and has been steadily increasing. There is profound emaciation. All the patients are seriously ill. No obvious cause for the ascites can be discovered. The opinion has been expressed that these are cases of darnel poisoning, but there are grave objections to this hypothesis. Our indigenous darnel is *Lolium temulentum*, which is extensively encountered as a "cultivated weed" in these districts, where it was formerly generally used as a substitute for coffee. It is a common wheatland weed, and all wheat supplies are contaminated with darnel seed. It may be safely asserted that wheat so contaminated is quite commonly used and does not give rise to symptoms of poisoning. The weed is said to be toxic to cattle, and this aspect of the matter has recently been the subject of investigation by the department of agriculture. Dr. Muir has written to the *Journal* pointing out that lolium is encountered on wheat lands and that he found 1,215 grains of this seed in 5 pounds of uncleaned wheat. It is more probable that these cases represent a phase of senecio poisoning. Senecio is a common weed in cornfields, and many of the species growing in these parts contain the highly poisonous alkaloids senecifoline and senecifolidine. Many cases of senecio poisoning are on record. Most of these hail from the Riversdale district. So far none of them have been reported from the southwestern wheat areas. But these cases of presumed darnel poisoning are in many respects similar to cases of senecio poisoning and differ only in that the patients are more drowsy and do not complain of griping abdominal pains. It is stated that recently many mules have died on the farms from which these four patients come, and that these, too, have been poisoned by darnel. The matter is sufficiently serious to warrant detailed investigation, for if darnel is proved to be poisonous elaborate precautions will have to be taken to rid the local corn of darnel contamination. Locally the darnel theory is scorned.

Pneumonia in the Gold Mines

Pneumonia has been a scourge of gold mining since the discovery of gold on the Reef. At one time the industry plumed itself on having conquered pneumonia, but now it seems that much of this satisfaction was premature. At a recent meeting of the Transvaal Mine Medical Officers Association, Dr. A. Smith opened a discussion on the present position of the disease in the Rand mines. He stated that its incidence during 1916-1923 was remarkably low but that since 1923 it has steadily increased despite the use of Lister's pneumonia vaccine. Prophylactic vaccination against pneumonia, formerly so much used that it became a matter of routine, has now been almost given up. Dr. Smith, using the material available on his two mines, the Government Areas, New State Areas, and Van Ryn Deep, where prophylaxis was stopped at different dates in order that the effects of the cessation might be noted, comes to the conclusion that the type of case encountered has not altered. The severity of pneumonia is much the same and the mortality rate has not increased, although the increased incidence of the disease has naturally increased the number of deaths as compared with other diseases. The present type of disease is influenzal in character. One speaker pointed out that the case mortality among the native workers in the Rand mines is not high; in England it is over 20 per cent while on the Rand, among native boys, it has been in the neighborhood of 12 per cent. This mortality seems low, and one wonders whether the figures can be accepted. Other speakers argued that while the disease seemed to be held in check the results of what had been done so far were not materially encouraging. In about 25 per cent of cases, stimulants have to be resorted to to tide the patient over the

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acute stage. In the discussion, doubt was expressed as to whether all cases classed as pneumonia were really cases of pneumonia. Sir Spencer Lister urged that there should be a uniform system of classification of the various forms of pneumonia, pointing out how puzzling the present figures are, especially when it is not clear what type of pneumonia is under discussion. Some mines have a high and others a distinctly low rate, so it was unfair to compare them. A mine with a relatively low rate would naturally show a relatively low mortality with or without inoculation. If any good is to come of a pneumonia investigation, every possible factor should be taken into consideration, but there are apparently a good many factors that are not obvious.

In a paper recently published in the *Journal of the Medical Association of South Africa*, Dr. Orenstein, in charge of the central mining Rand mines group at Johannesburg, also discusses the question of vaccine prophylaxis in pneumonia. He concludes that the experiments performed on natives prior to the introduction of wholesale immunization of all workers have been by no means conclusive and that only one of these appeared to justify the adoption of prophylactic inoculation; that in 1929 inoculation was discontinued in certain mines, and the experience of these, compared with that of mines in which inoculation has been continued, appears to be unfavorable to inoculation; that the contention that the clinical type of pneumonia has radically changed is not justified by evidence, and that the statement that prophylactic inoculation has diminished the attack rate in the early period of the natives' service is probably contrary to facts.

A Cancer Conference

A cancer conference is to be held in the Transvaal in September, immediately after the medical congress, which meets at Johannesburg in the second week of the month. This conference has been convened to discuss the desirability of establishing an anticancer association for South Africa on the lines of the Imperial Anti-Cancer Association, whose headquarters is in London, and also to found and endow a central cancer institute. In former letters I have dealt with the agitation to provide the union with radium for therapeutic purposes, and pointed out that the union government did not see its way clear to take part in that movement. It held that the supply of radium and the treatment of cancer fell both under the provinces and under the Africa act, which has reserved all matters of "hospitalization" to the provinces. In reality, public opinion is annoyed with the provinces, which, for various reasons, have made a thorough hash of administration, especially where public health is concerned. Both the profession and the public have urged that hospitals should be placed under direct central government control, but this has been opposed by those who wish to see administration decentralized as much as possible. The provinces have now had to form their own radium funds, and the public, which has taken a keen interest in radium therapy, has subscribed generously to these funds. The three largest hospitals have fairly adequate supplies of radium. Indeed, so actively has the radium movement made propaganda that it is possible that some injustice is being done to old colleagues who for many years have quietly and unostentatiously used radium and have achieved many successes with the small quantities of the element they possessed. Nowadays the public is told by the lay press that radium can be used only in the hospitals and that private specialists cannot possibly compete with the whole time hospital specialists. There is already far too much gratuitous treatment of so-called pauper patients, and this added burden may well be objected to by the profession. The cancer conference will doubtless discuss this side of the problem, just as it will discuss the question of providing a radium bomb for the treatment *à distance* of cancer cases. To acquire such a bomb means the outlay of a comparatively large capital, and it is questionable whether such expense is at present justifiable. It is a great pity that the central government did not foresee the problem developments of radiotherapy three years ago when it was warned that its dissociation from the movement would have lamentable results. Unless a central cancer institute is under central government control, it will carry little weight. Probably the forthcoming conference will attract public attention to the matter and may be the means of inducing the government to modify its policy.

Refusal to Attend Free Patients in Hospitals

The profession in the Orange Free State Province has refused to attend free patients in hospitals. To those who are wedded to the old idea of voluntaryism, this seems almost a monstrous thing to have done, but it has often been considered and will probably have the sympathy of the public once it is known for what reason the step was taken. The government has accepted the pauper as its own special liability, chiefly for political reasons. Although the pauper gets no dole, he gets practically everything else. For this provision the providers are paid—all except the doctor. He alone is called on to give his services free to patients whom the government feeds, clothes and otherwise provides for. Moreover, the doctor is taxed to provide these free privileges for the pauper, and he is taxed beyond the common layman because he is made to pay a special doctor's tax in the shape of a provincial license to practice. Even if he merely acts as honorary medical officer to a hospital, he has to pay the license fee of $50 a year. The medical association has taken a referendum on the subject and the result was that there was a small majority in favor of demanding payment for the treatment of hospital cases. This referendum cannot, however, be accepted as a decisive proof of what the profession feels; probably if the canvass had been individual instead of collective the vote in favor of demanding payment would have been larger. As it is, the men in the Free State have had the courage of their convictions and have refused to serve unless they are properly paid for their services. The provincial administration, which is highly indignant at this step that the doctors have taken, is said to be contemplating the passing of an ordinance which will compel a doctor either to serve in a voluntary, honorary capacity on a hospital staff or to pay a contribution toward the upkeep of the hospital if he wishes to make use of the institution. The local papers do not seem to be clear as to the ins and outs of the situation, which will doubtless crystallize within the next few days. At any rate, the step will have the effect of calling public attention to the annoyingly increasing obligations put on the medical profession during the last few years and the lack of privileges, which the profession has some right to complain of.

Marriages

FELIX HERMAN ZIMMERMANN, Watertown, Wis., to Miss Ruth Czamanske of Sheboygan, May 7.

MARTIN A. QUIRK, Newton, N. J., to Miss Mollie Steele of Eatontown, in Red Bank, July 15.

VERNON BRADLEY ROBERTS, Cincinnati, to Miss Katherine Pogue of Maysville, Ky., April 25.

JOSEPH E. WHEELER, Jefferson Barracks, Mo., to Miss Jane Cannell of Rockford, Ill., June 20.

LORENZ HENRY WESTENBERGER to Miss Theodora Isabel Warden, both of Chicago, June 9.

GEORGE M. DAWSON, West Palm Beach, Fla., to Miss Cora Babcock at Miami, March 3.

MARK E. NESBIT, Madison, Wis., to Miss Blanche Peterson of Minneapolis, March 28.

RALPH G. CAMPBELL to Miss Mary Louise Beadel, both of Newcastle, Pa., July 18.

MAINE C. ANDERSEN to Miss Marjorie Pancoast, both of Omaha, Neb., June 13.

GEORGE A. KRIZ, Milwaukee, to Miss Laura Gaterman in Elgin, Ill., April 24.

Deaths

Leonard Napoleon Boston ● Philadelphia; Medico-Chirurgical College of Philadelphia, 1896; instructor in obstetrics, 1897-1899, instructor in medicine, 1904, adjunct professor of medicine, 1905, and professor of physical diagnosis, 1912-1916, at his alma mater; professor of physical diagnosis, University of Pennsylvania, 1916-1917; associate professor of medicine, graduate school of medicine of the University of Pennsylvania, 1919-1926, and, since 1927, professor of physical diagnosis; professor of principles and practice of medicine and clinical medicine, Woman's Medical College of Pennsylvania since 1928; member of the American College of Physicians; bacteriologist to the Philadelphia Hospital, 1898-1901; director of the clinical laboratories of research, American Hospital for Diseases of the Stomach, in 1906; pathologist to the Frankford Hospital in 1909 and physician to the Philadelphia General Hospital, 1905-1925; author of "Text Book of Clinical Diagnosis by Laboratory Methods," and co-author of "Medical Diagnosis"; aged 60; died, July 4, of erysipelas.

Charles Allen Porter ● Boston; Harvard University Medical School, Boston, 1892; instructor of surgery, 1899-1909, assistant professor 1909-1912, associate professor 1912-1915, clinical professor in 1915, professor of clinical surgery, 1918-1922, John Homans professor of surgery, 1922-1927 and later emeritus professor, at his alma mater; member of the American Surgical Association, American College of Surgeons, American Society of Clinical Surgeons and member and past president of the New England Surgical Society; aged 64; consulting surgeon to the Massachusetts General Hospital, where he died, July 3, of carcinoma of the stomach.

Paul Tompkins Harper ● Albany, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1907; clinical professor of obstetrics, Albany Medical College; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons and the American College of Surgeons; regional consultant in obstetrics, New York State Department of Health; associate obstetrician, Albany Hospital, consulting obstetrician, Mary McClellan Hospital, Cambridge, and the Glens Falls (N. Y.) Hospital; author of "Clinical Obstetrics"; aged 50; died, July 11, in the University Hospital, Philadelphia, of pneumonia.

Alexander Rovinsky, New York; Yale University School of Medicine, New Haven, Conn., 1892; member of the Medical Society of the State of New York; assistant ophthalmologist to the City Hospital and on the staff of the Mount Sinai Hospital Dispensary; aged 61; died, June 22, following an operation for fibro-adenoma of the prostate.

Plumer Morton Woodworth, Altadena, Calif.; Chicago Medical College, 1878; member of the Illinois State Medical Society; at one time president of the Lincoln Park Board, Chicago; formerly on the staffs of St. Joseph's Hospital and the U. S. Marine Hospital, Chicago; aged 80; died, July 6, of epithelioma.

E. L. Watkins, Knoxville, Tenn.; Knoxville Medical College, 1905; formerly professor of obstetrics and gynecology at his alma mater; veteran of the Spanish-American War; aged 67; died, May 22, in the National Home for Disabled Volunteer Soldiers, Johnson City, of suppurative bilateral otitis media.

Maurice Edward Wilson ● Estherville, Iowa; State University of Iowa College of Medicine, Iowa City, 1897; past president of the Emmet County Medical Society; aged 62; died, May 16, of aneurysm of the aorta, angina pectoris and occlusion of the coronary artery.

Harry Hamilton Snively ● Columbus, Ohio; Ohio Medical University, Columbus, 1902; formerly director of health, public health council, and county health officer; served during the World War; aged 62; died, July 20, following an operation for mesenteric thrombosis.

Samuel M. Lyons, Sulphur, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1891; member of the Louisiana State Medical Society; member of the state legislature; formerly coroner; aged 63; died, June 19, of cerebral hemorrhage.

Frederick William Baeslack, Detroit; University of Buffalo School of Medicine, 1910; member of the Michigan State Medical Society; served during the World War; aged 57; died, June 19, in St. Joseph's Mercy Hospital, of cerebral hemorrhage.

Eugene Lyman Fisk ● New York; Medical Department of the University of the City of New York, 1888; medical director of the Life Extension Institute; aged 64; died, July 5, in Dresden, Germany, of cerebral hemorrhage.

John L. Butler, Sheridan, Ark.; University of Arkansas School of Medicine, Little Rock, 1894; Barnes Medical College, St. Louis, 1899; formerly member of the state legislature; aged 65; died, June 15, of cerebral hemorrhage.

James Thomas Whittaker, Pasadena, Calif.; Louisville National Medical College, Medical Department State University, Louisville, Ky., 1898; aged 55; died, March 3, in the Dunbar Hospital, Los Angeles.

James Clement Allison, Washington, D. C.; George Washington University Medical School, Washington, 1930; intern, Western Pennsylvania Hospital, Pittsburgh; aged 26; died, May 18, of pneumonia.

Robert Jackson McConnell, Baylis, Ill.; Keokuk (Iowa) Medical College, 1891; member of the Illinois State Medical Society; aged 68; died, June 18, of a self-inflicted bullet wound.

Ashley Webster Myers, Monroe City, Ind.; Medical College of Indiana, Indianapolis, 1902; aged 60; died, April 18, in a hospital at Vincennes, following an operation for appendicitis.

Robert Garnett Hawkins, Palmetto, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1890; aged 68; died, June 17, in Opelousas, of heart disease.

Roscoe T. Gephart, Cotton Plant, Ark.; Illinois Medical College, Chicago, 1898; member of the Arkansas Medical Society; aged 57; died suddenly, June 24, of myocarditis.

John T. Mutchmor, Oakland, Calif.; University of Manitoba Faculty of Medicine, Winnipeg, Manit., Canada, 1896; aged 55; died, May 12, of nephritis and cholecystitis.

Francis Eugene Harrison, Abbeville, S. C.; Medical Department of the University of the City of New York, 1887; bank president; aged 68; died, June 15, of uremia.

Wesley Alexandria Blair, Brooklyn, Ala.; Medical Department of the Tulane University of Louisiana, New Orleans, 1905; aged 48; died, June 30, of heart disease.

John K. McLennan, Monrovia, Calif.; University of Manitoba Faculty of Medicine, Winnipeg, Manit., Canada, 1894; aged 75; died, May 28, of bronchopneumonia.

Luther V. Bates, Arlington, Texas; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1899; aged 55; was found dead, in May, of cerebral hemorrhage.

Alfred Nathan Baer ● Milwaukee; Universität München Medizinische Fakultät, Munich, Bavaria, Germany, 1889; aged 65; died, May 25, of cerebral hemorrhage.

Earl Beedy Johnson, Erie, Pa.; Bellevue Hospital Medical College, New York, 1891; aged 63; died, May 30, of acute dilatation of the heart and myocarditis.

Thomas Orde Smith, Oakland, Calif.; University of Dublin School of Physic, Trinity College, Dublin, Ireland, 1878; aged 85; died, May 11, of diabetes mellitus.

Bayless B. Lang, Roodhouse, Ill.; Eclectic Medical Institute, Cincinnati, 1873; aged 78; died, June 30, of chronic myocarditis, nephritis and arteriosclerosis.

Ezra Palmer ● Boston (licensed, Massachusetts, under the Act of 1894); aged 70; died, June 5, of acute diffuse peritonitis due to a strangulated inguinal hernia.

Harry C. McKinley, Detroit; Michigan College of Medicine and Surgery, Detroit, 1896; aged 59; died, June 21, of mitral insufficiency and myocarditis.

A. J. Melchonian, Fresno, Calif.; Jefferson Medical College of Philadelphia, 1882; aged 88; died, May 11, in the Sample Sanitarium, of cystitis.

George Albert Lierle ● Barry, Ill.; Missouri Medical College, St. Louis, 1898; aged 54; died, June 24, of bronchopneumonia and heart disease.

Henry Allen Fink, Los Gatos, Calif.; Chicago Medical College, 1888; aged 77; died, May 25, of adhesive pericarditis and chronic endocarditis.

Joseph J. Stern ● Chicago; Chicago College of Medicine and Surgery, 1916; aged 57; died, May 3, in the Michael Reese Hospital, of heart disease.

Samuel A. Scruggs, Lauderdale, Miss.; Charity Hospital Medical College, New Orleans, 1877; aged 77; died, June 4, of angina pectoris.

Herbert Cameron Jones, Altadena, Calif.; Medical College of Ohio, Cincinnati, 1876; aged 76; died, July 5, of Parkinson's disease.

John T. Hedrick, Cannelburg, Ind. (licensed, Indiana, 1897); aged 81; died, June 16, of cerebral hemorrhage.

John Moeller, Milwaukee; Rush Medical College, Chicago, 1888; aged 74; died, July 2, of heat prostration.

Stanislaus von Martinitz, Chicago (licensed, Iowa, 1886); aged 85; died, June 29, of myocarditis.

Bureau of Investigation

THE CASE OF KOBA, ALIAS KUBA
The Varied Activities of a Japanese Impostor

It is remarkable how far a pleasing personality, combined with a lack of moral sense and a flair for forgery, will carry one. The interesting case of Lawrence Tsuneyoshi Koba, alias Tsuneo Kuba, M.D., about to be detailed, is to the point.

According to the records of the American Medical Association, Tsuneyoshi Koba, sometimes referred to as L. (Lawrence)

Photographs of L. Tsuneyoshi Koba, *alias* Lawrence T. Koba, *alias* Tsuneo Kuba, *alias* Dr. Conda. The full-length photograph in the center and the small photograph in the left-hand upper corner were taken in 1924, when Koba was at Johns Hopkins. In the lower left-hand corner, Koba is shown in his office in Seattle in 1929. The full-faced picture on the right was taken at the University of Minnesota this year.

Tsuneyoshi Koba, was born in Japan in 1900. He came to the United States some seventeen years ago, was graduated by the Seattle (Wash.) High School in 1919, and obtained a B.S. degree from Columbia University in 1924. He then enrolled in the freshman class at Johns Hopkins University School of Medicine for the session 1924-1925, but in June, 1925, was dropped from that school for failures and poor standing. Since that time, Koba has displayed forged credentials from Johns Hopkins University, including a forged diploma, and has by means of these obtained positions in various places and borrowed money from various persons. Early in 1929, THE JOURNAL was notified that Koba, under the name Lawrence T. Koba, had imposed on at least three New York hospitals by means of the forged diploma and endorsement from Johns Hopkins University School of Medicine. He is said to have a wife and two children in Long Island.

At this point, we cannot do better than quote from the paper read by Dr. Charles B. Pinkham, Secretary-Treasurer of the California Board of Medical Examiners before the Annual Congress on Medical Education, Medical Licensure and Hospitals in February, 1930. The paper was entitled, "Fraudulent Credentials."[1] Here, in part, is what Dr. Pinkham wrote about Koba:

"The Department of Licenses of the State of Washington reported Tsuneyoshi Koba left their state hurriedly, faced with prosecution for filing fraudulent credentials from Johns Hopkins University Medical School. The investigators for the California Medical Board found him in Los Angeles, where he had placed with a local lithographer an order for a replica of a Johns Hopkins medical diploma.

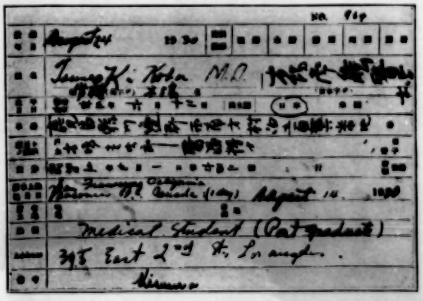
"The California Board has been unable to learn where Koba secured the *bona fide* Johns Hopkins Medical College diploma, which in mutilated form he submitted with his order for a duplicate. As an explanation of the mutilation of this diploma, Koba related that his children in a playful mood had cut out his name, the signatures of the faculty and the seal of the University. Following Koba's instructions, the Johns Hopkins diploma was duplicated, Koba's name engrossed and the spaces provided for signatures were left in blank. It is assumed that Koba proposed to forge the original signatures by using tracing paper in copying those that had been cut from the original diploma. Interested parties in Los Angeles were skeptical about Koba's credentials.

"To strengthen his claim that he was a graduate of Johns Hopkins University Medical School, Koba is said to have written a letter on an obsolete Johns Hopkins University letterhead, a statement purporting to be made by the officers of the University, relating he entered said medical school in September, 1923, with a Bachelor's degree from Columbia College, New York; that the following summer, during vacation from his Johns Hopkins medical studies, he returned to Columbia University and gained his Master's degree; that he graduated from Johns Hopkins Medical School among the ten highest in his class, his excellent scholarship gaining him membership in Phi Beta Kappa, well known literary fraternity, and that following graduation from the medical school he had completed a one-year internship. The forged signature of a former Johns Hopkins Executive Secretary ended this laudatory exposition of Koba's professional attainments. Although written in Los Angeles, this letter, enclosed in a Johns Hopkins University envelope, was postmarked as mailed in Baltimore, the day before it was written, conclusive evidence that as a part of the deceptive plot, the letter had been forwarded to Baltimore for mailing. . . .

"We have not as yet been able to apprehend Koba, who is thought to be *en route* East, hoping to have better success in gaining recognition of his fraudulent credentials."

So much for Dr. Pinkham's history of this interesting impostor. Dr. Pinkham was right. Koba *was* headed east, and the next we heard of him was from Minneapolis where he appeared as "Tsuneo Kuba, M.D."! There is in Minneapolis an advertising "cancer cure" concern known as "Dr. Williams' Sanatorium," with Boyd Williams, M.D., as superintendent. Williams, while a graduate in medicine, is not licensed to practice in Minnesota, although he has, for many years, conducted this concern. Koba got acquainted with Williams in Los Angeles and Williams is said to have offered Koba a salaried position in his institution.

It appears from evidence on file that Koba was able to get from Los Angeles to Minneapolis on money that he borrowed from a German girl in California, whom he seemed to have "touched" for various sums. When he reached Minneapolis he was practically penniless his explanation being that he was robbed of his wallet at a hotel in St. Louis. Williams, it seems, installed Koba in a rooming house, paid the rent for him and also paid the freight or express charges for Koba's trunks and books—the latter having come not from California, but from Winslow, Wash. Koba worked at Williams' sanatorium for several weeks and borrowed money from Williams, from time



Photographic reproduction (reduced) of an alleged deposit slip issued by the Japanese Consul at Los Angeles. In the original several alterations as to names and dates are in evidence.

to time, totaling nearly $100. Then, Williams began to get suspicious.

Koba's story in Minneapolis was that he was a Doctor of Medicine—"Tsuneo Kuba, M.D."—having recently arrived from Japan to make a tour of various clinics and hospitals and to take a postgraduate course in surgery. After Williams became suspicious of Koba (Kuba), he began making inquiries and was soon convinced that Tsuneo Kuba, M.D., was really L. Tsuneyoshi Koba, previously of Washington, Los Angeles, New York, etc. Williams then confronted Koba with the evidence that he had accumulated and accused him of being an impostor and a swindler. Koba then left Williams.

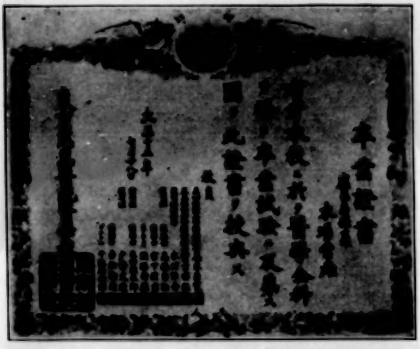
1. Printed in the *Federation Bulletin*, September, 1930.

About this time, Koba visited the University Hospitals of the University of Minnesota and represented himself to Dr. Owen H. Wangensteen, Chief of the Department of Surgery, as the son of a prominent surgeon in Tokyo and a graduate of a medical school in Tokyo. He submitted as evidence of his claim an alleged diploma from a Japanese medical school. (Reproduced with this article.) He expressed a desire to take up a fellowship in surgery. He was granted the privileges of the department as a voluntary Fellow and was assigned to the urological service of the hospital and in the laboratory of experimental surgery in the medical school. Dr. Guy S. Ford, Dean of the Graduate School, however, found that Koba could present no satisfactory credentials, so the man was at no time registered as a graduate student.

In this capacity, he was introduced to Dr. Kano Ikeda, a reputable physician of St. Paul and a Fellow of the American Medical Association. And here it should be said that much of the information that the Bureau of Investigation has been able to accumulate has been due to the untiring activities of Dr. Ikeda, who, because he could read Japanese, was in a peculiarly favorable position to investigate Koba's antecedents.

Dr. Ikeda entertained Koba and, at that time, Koba told the doctor that his name was Tsuneo Kuba, that he was a graduate of the Zekei Hospital Medical College, Tokyo, class of 1926; that he had worked in St. Luke's International Hospital in Tokyo as a house physician until his departure for America in August, 1930; that his father, Dr. Kichiziro Kuba, was a prominent member of the surgical staff of this hospital and a classmate of Dr. Dandy of Johns Hopkins. Koba also told Dr. Ikeda that he was not a government student but was supported by his father, who was to provide him with $1,200 a year in two instalments, and that he was, at that time, expecting $600 from home, but that the money had failed to arrive. In the meantime, according to his story, he was practically without funds and asked Dr. Ikeda for a loan of $125.

Dr. Ikeda was impressed by Koba's seeming sincerity and apparent honesty, and while he did not, at that time, lend him the money asked for, he did send him a check later. Still later, Dr. Ikeda began to hear rumors of Koba's real character, and Boyd Williams showed Dr. Ikeda the letters and telegrams in his possession concerning Koba. Even then, Dr. Ikeda was not completely convinced that Koba was an impostor, and a few

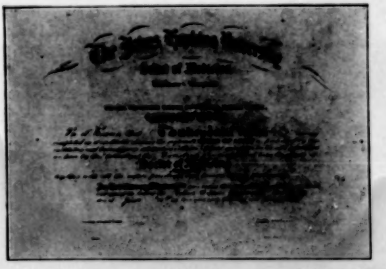


Photographic reproduction (greatly reduced) of a diploma produced by Koba to accord him admission to the Graduate School of the University of Minnesota.

days later, Koba (Kuba) produced a printed diploma from Tokyo Zekei Hospital Medical College and submitted a deposit slip, supposedly issued by the Japanese Consul at Los Angeles, for his passport and a birth certificate.

At this time, Koba told Dr. Ikeda that he was being persecuted by Boyd Williams. He also told Dr. Ikeda that there was a man named Tsuneyoshi Koba, who had been going around the country posing as a physician and for whom he was being mistaken, because of the similarity of names. He further stated that he had met Koba at a ball game in Los Angeles and had bought from him all of Koba's medical books. This was his explanation of the fact that the books he had in his possession had been shipped from Winslow, Wash., where the parents of Koba were known to reside.

About this same time, Koba, still posing as Tsuneo Kuba, wrote to the Registrar of Johns Hopkins Medical School, stating that owing to an unfortunate similarity of names, he was being confused with Koba. He asked the Registrar to notify the



Photographic reproduction (reduced) of the forged diploma used by Koba in filing credentials with the Department of Licenses of the State of Washington. (Furnished by Dr. Pinkham in illustrating his paper on "Fraudulent Credentials" read before the Annual Congress on Medical Education, Medical Licensure and Hospitals, February, 1930.)

American Medical Association that he (Kuba) was not the impostor, Koba. A few days later, Koba, with unparalled effrontery, and still using the alias "Tsuneo Kuba, M.D.," wrote to the Bureau of Investigation, stating what he had already stated to others, that he was a graduate in medicine from Tokyo Zekei Hospital Medical College, had come to this country in August, 1930, to take postgraduate work, and that he was in the unfortunate predicament of being confused with Tsuneyoshi Koba. In this same letter to the Bureau of Investigation, he gave his side of the story regarding his connection with Boyd Williams, the cancer-cure person. He stated that Williams had no operating rooms, no sterilizing apparatus, no trained nurses, but that he operates at the patient's bed, using electric and chemical cauterization. He stated, further, that during his very brief stay with Williams, there were "five deaths from post-operative erysipelas, severe hemorrhage and some of them died from puncture of the pleuro-peritoneal cavity by chemical cauterization."

The Bureau of Investigation, in order to call Koba's bluff, asked him to answer the following questions by return:

"1.—In what year did you enter Zekei Hospital Medical College?
"2.—What was the date of your graduation from this college?
"3.—What is the name of the dean or the registrar of the college?
"4.—About how many other members were there in the class in which you graduated?
"5.—Give the names of at least four of the men who were graduated in the same class that you were.
"6.—Give the name and address of your father, who you have stated is a physician in Japan.
"7.—Give the name of the ship on which you traveled from Japan to the United States; also, the name of the line to which that ship belongs.
"8.—At what port did you enter the United States and on what date?"

Needless to say, the American Medical Association received no further letters from Koba.

In the meantime, Dr. Ikeda of St. Paul was following up Koba's case, as was also the Bureau of Investigation. Letters were written to the Japanese Consuls at Los Angeles and Seattle, and the matter was also taken up with the immigration authorities. The county attorney's office had been called into the case, not only by Williams, but also by a local store in which Koba had an account. Koba was, apparently, successful for a while in convincing the county attorney that he was the victim of mistaken identity. He presented to that official a letter alleged to be from his father in Japan; the translator of this letter was also "sold" on Koba and was about to lend him some money when Dr. Ikeda warned him not to.

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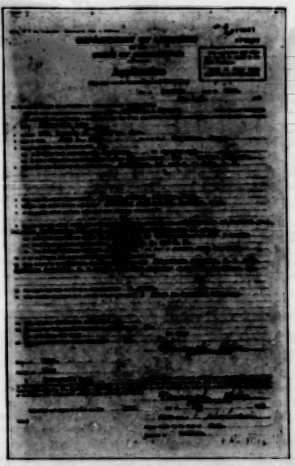
By this time, of course, the University of Minnesota had dropped Koba. Dr. Ikeda had an appointment with him to have his papers photographed, but Koba broke the appointment on the excuse that an agent had appeared at the University Hospital the day before and had carried away all of his original papers. Dr. Ikeda found that no such episode had occurred. Fortunately, Dr. Wangensteen, Chief of the Department of Surgery of the University, practically forced Koba to sit for his photograph and to have the deposit slip for his passport, also photographed. The deposit slip, which is reproduced with this article, shows plainly in the original several alterations made as to dates and as to Koba's name.

The photograph of Koba that was taken at this time, was sent to the Bureau of Investigation, which, in turn, had copies made of it which were sent to the authorities in the states of California and Washington, as well as to Johns Hopkins University School of Medicine and to some others that had known Koba when he was in the East. Replies came back confirming the identification of "Tsuneo Kuba" with Tsuneyoshi Koba.

Copies of the same photograph were also sent to several of Koba's former friends and victims in California, who all seem to have identified it as that of Tsuneyoshi Koba. Dr. Ikeda states that an uncle of Koba's who was called in by the Seattle



Photographic reproduction (reduced) of Koba's application for license to practice in the state of Washington.

Consul, not only positively identified the photograph as that of his nephew, Tsuneyoshi of Minneapolis, but also informed the Consul that Tsuneyoshi was his real name and Tsuneo Kuba was one of his several aliases.

Finally, thanks to the persistent activity of Dr. Kano Ikeda, the immigration service got busy and on June 5, 1931, Koba, under his alias, "Tsuneo Kuba," was arrested at Fargo, N. D., on a warrant charging him with entry into the country on false pretenses. (It will be remembered that Koba had claimed that as Tsuneo Kuba, he came into the United States last August [1930], when, as a matter of fact, he came to the United States some seventeen years ago.) He was reported to be acting as a valet to a wealthy resident of Fargo at the time. When brought before the federal authorities, in order to avoid deportation, he confessed that he was Tsuneyoshi Koba, who came into the United States in 1914. Under the circumstances, from the technical point of view, the man was not deportable and the federal officers released him on June 23, this year.

Where and under what name and with what forged credentials will Koba next turn up?

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

IVY POISONING AND LOBINOL

To the Editor:—Has any record of research work been submitted to you that has added to the work of McNair on the chemical nature of ivy poisoning as published in 1921, or that has proved it to be inadequate? I refer to his contention that the nonvolatile oil present in the ivy plant, which he calls lobinol, is an unsaturated compound of the aromatic series containing carbon, hydrogen and oxygen. He further states that the oxygen may be present as hydroxyl; that the poison is phenolic and may contain two hydroxyl groups in the ortho position. Is the aromatic nucleus of lobinol a simple benzene, naphthalene, anthracene or phenanthrene ring? What possible structural formula would you assign to the poison? I should appreciate your listing for me a number of the most used specific cures for ivy poisoning; in each case the active constituent or compound present and the physiologic reaction set up by it.

F. DESALVO, M.D., Niagara, Wis.

ANSWER.—In May, 1917, McNair published an article on the action of the oxidase of poison ivy. This oxidase was shown to cause the total loss of the irritating poisonous properties of the sap. Its action was shown to accelerate the transfer of molecular oxygen to phenols and aromatic amines and to accelerate the oxidation of ortho-isomeric and para-isomeric phenols more greatly than metaphenols. As the poison contains no nitrogen (McNair, 1916) the action of the enzyme would indicate a phenol as the poison. McNair's chemical analysis (1921) confirms this indication; he states that "the principal dermatitant appears to be a polyhydroxyphenol." Pfaff assigned the formula $C_nH_{2n}O_4Pb$ to a more or less pure lead precipitate of the poison. The formula of the aromatic nucleus of the poison is not known. McNair's work has been supported by Sando (*Am. J. Botany* **5**:112, 1918). No other chemical work has been published on the subject since McNair's contributions in 1921.

A list of the most used remedies for ivy poisoning includes lime water, ammonium chloride, bromine, chlorinated soda (Labarraque's solution), copper sulphate, lead acetate, mercuric chloride, potassium permanganate, sodium bicarbonate, sodium chloride, sodium thiosulphate, zinc oxide, ethyl nitrite, fluidextract of Grindelia, the hypodermic injection of the poison itself, and ferric chloride.

Lime water, because of its alkalinity, may slightly accelerate the oxidation of the poison. Bromine is irritating to the skin but is readily absorbed by the poison and may perhaps form a nonpoisonous compound. Lead acetate precipitates the poison, but the compound formed is more physical than chemical and is still poisonous. Mercuric chloride may be reduced to mercurous chloride, as the poison will reduce metallic salts. Potassium permanganate may oxidize the poison, but it is not as efficient a remedy as ferric chloride. The hypodermic injection of the poison may cause insidious nephritis (Morris: *M. Times* **58**:259 [Sept.] 1930). Tincture of ferric chloride, when added to the poisonous sap or to an alcoholic solution of the poison, immediately causes a black precipitate to form; the resulting precipitate and solution are nonpoisonous when applied to the skin of sensitive individuals. The action of the other remedies mentioned is not known.

Further, more detailed information is to be found in the book "Rhus Dermatitis" by J. B. McNair, University of Chicago Press, 1923.

The use of a heavy lather shortly after exposure will remove the resin. Care must be taken, however, that contaminated clothing is not brought subsequently into contact with a susceptible individual.

HISTAMINE

To the Editor:—Will you kindly inform me on the following: 1. What is the name and formula of the biochemical or any other neutralizing agent or antidote to histamine? 2. Where can I obtain samples and prices of histamine and antihistamine?

CARL C. FRANKEN, M.D., New York.

ANSWER.—1. Chemically, no antidote for histamine, if administered hypodermically or by vein, exists. This compound is a normal product of metabolism—is derived from histidine and is formed in quantities under normal conditions (bacterial decomposition) in the gastro-intestinal tract. Normal daily

excretion ranges from 5 to 7 mg. Taken orally, it is ineffective; it is largely, if not entirely, destroyed by intestinal digestive juices and bacteria.

Hypodermic doses of 0.25 mg. give excellent gastric secretions, without side actions.

Hypodermic doses of 0.5 mg. and above produce flushing of the face, headache, bronchoconstriction and vertigo.

The most satisfactory antidote is a pharmacologic antagonist —epinephrine. This drug antagonizes and neutralizes the asphyxial bronchiolar constriction that occurs after histamine and limits the strain on the right heart. Epinephrine in a dosage of 1 part to 10 parts of histamine antagonizes the dilator action of histamine on the cerebral vessels and definitely protects against lethal dosages in animals.

Histamine produces a shock blood pressure in larger dosages as the result of dilatation of the vessels of the extremities, kidneys and splanchnic areas. In addition there is a generalized dilatation of capillaries together with an increased capillary permeability.

Epinephrine antagonizes bronchoconstriction. Capillary permeability may be decreased by calcium gluconate in 5 to 10 cc. doses by vein or intramuscularly. Low blood pressure may be controlled by lowering the head and raising or binding the legs, with administration of ephedrine by muscle or vein. Acute effects of histamine are usually transient, and persist at most from ten to fifteen minutes.

2. Histamine may be obtained from Burroughs, Wellcome & Co., Inc., New York, as Tabloid ergamine acid phosphate. Each tablet contains 0.003 Gm. of histamine.

The literature on these questions is well covered by:

Weiss, Lennox and Robb: *Proc. Soc. Exper. Biol. & Med.* **26**: 706, 1929.

Lio, G.: *Arch. internat. de pharmacodyn. et de therapie* **33**: 409, 1929.

Gompertz, L. M., and Cohen, W.: *Am. J. M. Sc.* **177**: 59 (Jan.) 1929.

Perla, D., and Gottsmann, J. M.: *Am. J. Physiol.* **89**: 152 (June) 1929.

Ganter, G., and Schretzenmayr, A.: *Arch. f. exper. Path. u. Pharmakol.* **147**: 123, 1929.

Hochrein, M., and Meier, R.: *Arch. f. exper. Path. u. Pharmakol.* **146**: 288, 1929.

DUHRING DISEASE, OR DERMATITIS HERPETIFORMIS

To the Editor:—Please give me the latest treatment of Duhring disease. Please omit name.

M.D., Ohio

ANSWER.—There have been no recent valuable additions to the treatment of dermatitis herpetiformis. A careful study of the patient, particularly a search for focal infection and for causes of nervous strain, should be made and correction of any existing abnormality attempted. Arsenic remains the most certain means of relief; but its chronic untoward action must be watched for, and other means of relief that are free from such danger should be tried in order to protect the patient. For the same reason, all prescriptions for arsenic should be labeled "do not repeat."

Ultraviolet rays to reaction on the areas attacked, and mild general exposures to the point of tanning, are often of great value. X-rays, mild exposures, will sometimes give prompt relief; but their application must be limited to a total of two or three full erythema doses on each area.

Bleeding with or without reinjection of the whole blood or the serum is often helpful. Saline cathartics are of temporary value, perhaps in the same way.

Foreign protein therapy, milk or typhoid vaccine injections, may help. Andrews recommends vaccines made from the patient's stool. Only those are used which give a reaction when used for skin tests. The growth is made on broth, dextrose and blood agar from the second or third stool produced by a good sized dose of castor oil. The organisms are isolated and vaccines made from them, 50 million per cubic centimeter. Intradermal tests are made on the patient's forearm, a control of physiologic solution of sodium chloride being used. Reactions smaller than one inch in diameter are disregarded. From the vaccines giving positive reactions a mixture is made, each vaccine in proportion to its reaction, the whole containing two billion organisms per cubic centimeter. The first dose is 2 minims, the dosage increasing 2 minims on the fourth day to a maximum of 60 minims (4 cc.). If a severe reaction occurs, the amount of the next dose should be decreased or the interval lengthened (Andrews, G. C.: Diseases of the Skin, Philadelphia, W. B. Saunders Company, 1930, p. 384).

Bromides by mouth or intravenously are often helpful.

Locally sulphur is the most reliable aid. It may be given in lotion, as solution of sulphurated lime, N. F., diluted from five to ten times, or as a water or alcohol lotion with washed or precipitated sulphur in suspension. Or it may be put in an ointment, from 5 to 20 per cent or stronger. Various forms of tar may be used, perhaps the most satisfactory being coal tar solution, N. F., from 10 per cent in water up to full strength.

Baths containing oatmeal or bran, soda, or from 2 to 4 ounces of solution of sulphurated lime or sulphurated potassa are often prompt in relief.

GASOLINE DERMATITIS

To the Editor:—A young man, four years ago, spilled ethyl gasoline (tetra-ethyl) over the posterior part of the neck and shoulders, which immediately resulted in a severe burn. He never entirely recovered from the effects of this burn and now has an eruption and discoloration of the parts affected. What does ethyl gas contain that might produce a burn? What is the usual duration and probable remote effect of such a burn when a large surface of the skin is affected? Please omit name and address.

M.D., Missouri.

To the Editor:—A man worked for a while at a gas station, where he dispensed ethyl gasoline. He had a small pimple on his arm and he rubbed it a little, because it itched, and the ethyl gasoline pipe line leaked and the gas flowed over his arm and over the pimple. The arm swelled and the pimple formed pus. An abscess developed in the buttock. The man also developed boils. Did the ethyl gasoline running over his arm have anything to do with this? Almost immediately after the gas flowed over his arm it began to swell up.

L. F. WAGNER, M.D., Reading, Pa.

ANSWER.—It is possible that tetra-ethyl lead may be unduly blamed for skin lesions properly attributable to gasoline. Few workers have investigated the toxicity of tetra-ethyl lead as such. Those who have, apparently have not detected the probability of skin inflammation. The chemical adjuvants in any such mixtures, if in fact they exist, are unknown. Ethylene dibromide is said to be a fairly frequent associate with tetra-ethyl lead. This substance is a skin irritant. The amount likely to exist in gasoline is far too little to produce irritation under any save fortuitous circumstances.

Gasoline should be suspected as the cause of this inflammation. An uncomplicated gasoline dermatitis runs about the course of a single attack of poison ivy dermatitis. Chemical dermatoses are frequently complicated by, and unduly prolonged by, mycotic infections. In this case microscopic examination should be made for evidences of fungus infections. Fungus infection of the feet (for example) may lead to chemical (toxic) lesions in remote portions of the body.

SENSITIZATION TO ARSPHENAMINE

To the Editor:—I have been treating a woman, aged 18, for syphilis. The Wassermann, Kolmer and Kahn tests were definitely positive several times in different laboratories. Her general health is excellent and the history is negative. There are no stigmas of congenital syphilis. Her parents' Wassermann reactions are negative. I began treatment with 0.3 Gm. of neoarsphenamine intravenously. Two days after this injection the patient developed severe itching all over the body, which lasted ten days. At the same time there appeared on the abdomen discrete red elevations at the roots of hair follicles. These lesions looked like the keratosis pilaris from which the patient suffers every winter on her knees. When the itching and rash disappeared, I gave 0.15 Gm. of neoarsphenamine intravenously. Following this there was generalized itching which lasted two days, and a rash on the abdomen like that described. One week later I gave her 0.3 Gm. of the same medicine. This dose was not followed by any sort of reaction. At weekly intervals then I gave 0.45 Gm. of the same drug for five doses. There was absolutely no itching, rash or any other sort of reaction during this time. After the sixth dose of 0.45 Gm., however, the patient's face began to feel rough and looked leathery to her. This was three days after the medication. On the morning of the fourth day she came to me with her face so greatly swollen that she could not open her eyes. The edema extended down on her neck and shoulders, but to a much less degree than on her face. At the same time there was generalized itching. The swelling and itching subsided in the course of one week. The urine and the blood count were normal. The Wassermann reaction was still positive. Since this reaction she has received six doses of a bismuth compound intramuscularly. Should this patient in your opinion ever be given neoarsphenamine again? Or should she be given small doses again, and, if no reaction follows, have the doses increased to the average amount? Does any skin reaction less than exfoliative dermatitis constitute a warning to stop arsenic medication in the treatment of syphilis? Please omit name.

M.D., Maryland.

ANSWER.—This case represents one of the puzzling situations that may arise in the course of treatment for syphilis. Postarsphenamine dermatitis after an injection of an arsphenamine product is extremely rare, although a few cases have been reported. Whether or not the itching which followed the first,

second and last injections of the series of seven injections of neoarsphenamine was due to sensitization of the drug is difficult to say because of the fact that the third to the sixth injections, inclusive, were not followed by any symptoms of intolerance. However, the edema and generalized itching appearing after the last dose is strong evidence in favor of a sensitization against the drug. It would probably be better not to attempt ever to give this patient neoarsphenamine again. If there is reason to believe that she has a recently acquired syphilitic infection, an attempt might be made to give her silver arsphenamine, but not until an additional two months' interval following the last described reaction. Occasionally patients sensitive to arsphenamine or neoarsphenamine can take silver arsphenamine without difficulty. If this is to be attempted, the first injection of silver arsphenamine should not exceed 0.05 Gm. If there is no reaction to this dose a second injection may be given two weeks later of 0.1 Gm., and at two weeks' intervals instead of one, provided no reaction occurs, the dose may be gradually increased by steps of 0.05 Gm. until an average therapeutic dose of from 0.25 to 0.3 Gm. is reached. If the patient succeeds in tolerating silver arsphenamine administered in this manner, her further treatment may be carried on with alternating courses of silver arsphenamine and bismuth in the usual manner. If, on the other hand, there are signs of generalized itching or a skin rash appearing after any of the injections of silver arsphenamine, the use of any of the arsphenamine products should be permanently abandoned.

ALCOHOL INJECTION OF ORBITAL NERVES

To the Editor:—I should like to know what strength of phenol-alcohol is used in injecting an infra-orbital or supra-orbital nerve for neuralgia of parts involving their supply. J. F. BUZZARD, M.D., Altoona, Pa.

ANSWER.—Usually from 80 to 90 per cent alcohol without phenol is used.

THE OLDEST KNOWN MEDICAL BOOK

To the Editor:—In THE JOURNAL, May 2, page 1534, is the statement that the Edwin Smith Papyrus represents the oldest known medical work. I was under the impression that the Hindu system of medicine, Ayr Veda, a part of the Vedas, coming perhaps from Brahma, "the fountain-head of all learning," and the medical writings of Rig Vedic times (4000 B. C.) were much older. Is not Atreya Samhita the oldest existing work on medicine? And the works of Dhanwantari, the father of Hindu medicine, and of his pupil, Susruta, are certainly to be recalled in this connection as a matter of historical interest and accuracy.

HYMAN I. GOLDSTEIN, M.D., Camden, N. J.

ANSWER.—In regard to the Edwin Smith Papyrus, there is no doubt that it is the oldest authenticated medical document. It might be dated at least 1600 B. C., and as its glosses are in the language of the Middle Kingdom (2440-1580 B. C.), the text itself might go back even to the Old Kingdom (3400-2440 B. C.). The antiquity of Hindu and Chinese medicine is regarded by scholars as grossly exaggerated, and even Indian art is of recent provenance.

The subject is well discussed in an essay entitled "Newer Sidelights on the Antiquity and Provenance of Indian Medicine," by Fielding H. Garrison (*Bull. New York Acad. Med.* **6**:523 [Aug.] 1930). He refers to some studies by Dr. Reinhold Müller, who has been revising the whole fabric of ancient Indian medicine, especially with reference to chronology. Müller's work may be consulted in *Janus* (**33**:349, 1929) and also in the *Archiv für Geschichte der Medizin* (**22**:135, 1930).

CARBEX CONJUNCTIVITIS

To the Editor:—I recently had occasion to treat two cases of severe conjunctivitis, both of which apparently resulted from rubbing the eyes after the handling of a cartridge containing a chemical called Carbex. This cartridge is employed in a carbon removing device for automobiles and is manufactured by the Carbex Chemical Company of Chicago. I should appreciate knowing the chemical contained in Carbex and the best method for treating a conjunctivitis produced by it. Please omit name. M.D., New York.

ANSWER.—"Carbex" is a trade term applied to two unrelated substances. One is silicon carbide, which is carborundum; the other is said to be naphthalene or some substance chemically similar to naphthalene. This substance is manufactured by the Carbex Chemical Company.

If naphthalene is the active substance, a conjunctivitis may readily be produced. The magnitude of toxicity is, however, not high. Naphthalene, as a powder or in the form of balls, is a well known moth repellent in most households. In addition, naphthalene has been used in medicine as an anthelmintic, a general gastro-intestinal tract disinfectant, and in many ointments for external application. No specific treatment is known to exist, but relief may be expected from measures commonly applied for the relief of pain and the control of inflammation and secondary infection.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 8. Sec., Dr. Harry C. DeVighne, Juneau.

AMERICAN BOARD OF OTOLARYNGOLOGY: Indianapolis, Sept. 12. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, Sept. 18. Sec., Dr. Charles B. Pinkham, 420 State Office Building, Sacramento.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations will be held at various cities throughout the country where five or more candidates are enrolled, Sept. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia.

NEW HAMPSHIRE: Concord, Sept. 10-11. Sec., Dr. Charles Duncan, Concord.

OKLAHOMA: Oklahoma City, Sept. 8-9. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, Sept. 1. Sec., Dr. Diego Biascoechea, P. O. Box 804, San Juan.

WISCONSIN: *Basic Science,* Madison, Sept. 19. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Colorado January Examination

Dr. William Whitridge Williams, secretary, Colorado State Board of Medical Examiners, reports the written examination held at Denver, Jan. 6, 1931. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Three candidates were examined, 2 of whom passed and 1 failed. Five candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per cent
Kentucky University Medical Department		(1905)	75.1
Washington University School of Medicine		(1928)	87.6
College	**FAILED**	**Year Grad.**	**Per cent**
Osteopath			68.3
College	**LICENSED BY RECIPROCITY**		**Reciprocity with**
College of Medical Evangelists		(1928)	California
Rush Medical College		(1930)	Illinois
University of Michigan Medical School		(1906), (1925)	Michigan
University of Nebraska College of Medicine		(1925)	Nebraska

Iowa Reciprocity and Endorsement Report

Mr. H. W. Grefe, director, Iowa State Board of Medical Examiners, reports 12 physicians licensed by reciprocity with other states, and 1 by the endorsement of credentials, from Feb. 11 to May 13, 1931. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Loyola University School of Medicine		(1930)	Illinois
Northwestern University Medical School		(1929)	Illinois
Keokuk Medical College, College of P. & S.		(1908)	Missouri
University of Kansas School of Medicine		(1926)	Kansas
Univ. of Maryland Sch. of Med. & Coll. of P. & S.		(1912)	Virginia
University of Nebraska College of Medicine		(1930, 3)	Nebraska
Woman's Medical College of Pennsylvania		(1924)	Penna.
Marquette University School of Medicine		(1930)	Wisconsin
Milwaukee Medical College		(1910)	Wisconsin
McGill University Faculty of Medicine		(1922)	Illinois
College	**ENDORSEMENT OF CREDENTIALS**	**Year Grad.**	**Endorsement of**
Northwestern University Medical School		(1930)	N. B. M. Ex.

Alabama Reciprocity Report

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports 10 physicians licensed by reciprocity with other states from Jan. 1 to May 6, 1931. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1924), (1928), (1929)	Georgia
University of Georgia Medical Department		(1927)	Georgia
Northwestern University Medical School		(1929)	Mississippi
University of Louisville School of Medicine		(1929)	Kentucky
Tulane University of Louisiana School of Medicine (1929)		(1929)	Louisiana
Medical College of the State of South Carolina		(1927)	N. Carolina
Memphis Hospital Medical College		(1911)	Mississippi

Book Notices

SURGERY: ITS PRINCIPLES AND PRACTICE FOR STUDENTS AND PRACTITIONERS. By Astley Paston Cooper Ashhurst, A.B., M.D., F.A.C.S., Professor of Clinical Surgery in the University of Pennsylvania. Fourth edition. Cloth. Price, $10. Pp. 1189, with 1,078 illustrations. Philadelphia: Lea & Febiger, 1931.

This edition was written by the author because of the many changes in the surgical concepts arrived at during the last several years. The text is divided into three sections: general surgery, systemic surgery and regional surgery. The subject matter is covered in a clear, logical and concise manner and may be used by the student and practitioner as an accurate teaching and reference book on general surgery. In the section on general surgery the first chapter considers inflammation as the basic reaction underlying all pathologic conditions in the body with the exception of neoplasms. Hence the reader starts on this sound foundation and is better able to understand the remainder of the text. The pathologic conditions resulting from inflammation are next considered, with especial reference to the generalized diseases. The infectious granulomas are considered separately with many illustrations. The remaining chapters of this section consider the usual general surgical features found in similar textbooks. In the section on systemic surgery the first chapter is devoted to surgery of the blood vascular system. The field is covered in a comprehensive manner and includes the latest features of heart and vessel surgery. Injection treatment of varicose veins is also considered. Patients with angina pectoris have been relieved in about 50 per cent of the reported cases by paravertebral injections of alcohol. Aneurysmorrhaphy is described in great detail. The chapters devoted to diseases and injuries of the bones and joints are complete and utilize roentgenograms and skeletal demonstrations to clarify the various technical features. In the section on regional surgery, the surgical conditions of various parts of the body are considered in a complete manner. Injuries of the skull and diseases of the brain are carefully analyzed with reference to diagnosis and treatment. Likewise, pathologic conditions of the breasts are classified in a practical way. The author feels that palliative removal of inoperable breast carcinomas is justifiable for the comfort of the patient, and postoperative roentgen therapy has not been found of any great help in the prevention of recurrences. Peritonitis is discussed at great length with particular reference to appendicitis. The various methods used in the treatment of peritonitis are elaborated on and, more especially, the Ochsner treatment, which, the author feels, should be resorted to only when the diffuse peritonitis has advanced so far that the rigidity has disappeared and marked distention is present. He further takes the view that duodenal and gastric ulcers are usually surgical conditions, as medical treatment is followed by a high percentage of recurrence. The remaining chapters, on the surgery of the biliary system and on genito-urinary surgery, are written in the clear, inclusive and concise style characteristic of the book.

BLUTKRANKHEITEN UND BLUTDIAGNOSTIK: LEHRBUCH DER KLINISCHEN HÄMATOLOGIE. Von Dr. Med. Otto Naegeli, LL.D.H.C., o. Professor der inneren Medizin an der Universität Zürich. Fifth edition. Cloth. Price, 89.60 marks. Pp. 704, with 104 illustrations. Berlin: Julius Springer, 1931.

This is an attempt to correlate all the important advances in hematology during the last eight years. This textbook has always enjoyed a merited popularity among those interested in hematology, and the revised edition has been anxiously awaited. The book has deviated little from its traditional method of presentation. Many of the colored plates illustrating morphologic variations of various types of blood cells, which were introduced for the first time in the last edition, are not found in this revision. This change will be deplored by those who have valued the excellent illustrations of the text. Among some of the features in the presentation is a critical review of the sedimentation reaction. Naegeli regards the advance made in this field as a noteworthy contribution to the scientific study of disease. He reviews the advances in morphology and embryology of blood cells from a blood biologic basis rather than from a strict histologic consideration. In the discussion of the anemias, pernicious anemia particularly is considered in detail. The recent revisions as to its possible etiology and therapy are incorporated in the discussion. While no significant advances have been made in the knowledge of leukemias, Naegeli has stressed the biology of the atypical cells. He favors arsenic therapy as opposed to roentgen therapy on the basis of his vast experience in this field. Every phase of hematology is discussed with due consideration for the important contributions of every country. The discussions are tempered with the personal experience and research of the author. The revised edition may not meet the expectations of those who have followed Naegeli's book through its various revisions, but it is recommended to those who do not have a copy. It possesses great merit as an encyclopedia of hematology and has no rival in the English language.

FUNDAMENTALS OF DERMATOLOGY. By Alfred Schalek, M.D., Professor of Dermatology and Syphilology, University of Nebraska College of Medicine. Second edition. Cloth. Price, $3. Pp. 247, with 58 illustrations. Philadelphia: Lea & Febiger, 1931.

The principal change in this edition appears to be in the color of the binding, which is now green instead of maroon. The general plan and content of the book remain the same. A few minor additions have been made to the text. The student with a limited amount of time at his disposal will find this a useful manual for rapid review.

THE MODERN HOSPITAL YEAR BOOK: THE HOSPITAL REFERENCE BOOK, 1931. AN ANNUAL REFERENCE VOLUME ON THE BUILDING, EQUIPMENT, ORGANIZATION AND MAINTENANCE OF HOSPITALS, SANATORIUMS AND ALLIED INSTITUTIONS. PUBLISHED FOR HOSPITAL EXECUTIVES, BUILDING AND EQUIPMENT COMMITTEES, PURCHASING DEPARTMENTS, AND ARCHITECTS. Eleventh edition. Cloth. Price, $2.50. Pp. 895, with illustrations. Chicago: Modern Hospital Publishing Company, Inc., 1931.

This is a hospital reference book on planning, equipment, organization and purchasing. The material is arranged in an orderly way, and it contains an alphabetical finding index of hospital supplies, equipment and building specialties, in addition to an index to advertisers. Useful features are the complete check list of equipment for a hospital and also a suggested check list for a hundred bed hospital. The 200 pages of text matter contain lists of national and state hospital associations and concise suggestions for hospital procedures, planning, heating, lighting, ventilating and economies. There is one chapter on planning the initial and the future building program. It covers a variety of problems of the hospital executive and buyer —from the choosing of the architect to the selection of the kitchen tables. The book is well illustrated with both exterior and interior views of hospitals.

DIE KRANKHEITEN DES STOFFWECHSELS UND IHRE BEHANDLUNG. Von Professor Dr. E. Grafe, Direktor der Medizinischen- und Nervenklinik der Universität Würzburg. Fachbücher für Ärzte. Band XIV. Herausgegeben von der Schriftleitung der Klinischen Wochenschrift. Cloth. Price, 29.60 marks. Pp. 519, with 90 illustrations. Berlin: Julius Springer, 1931.

This volume, one of a series of handbooks for physicians, although primarily practical in purpose, is commendably broad in its scope. The experimental and theoretical considerations underlying the etiology and treatment of the various metabolic disturbances are adequately reviewed. There are many references to the literature, the bibliography being conveniently placed as footnotes on the pages on which the references are cited. The significant American literature is fairly well represented. The subject matter is divided into three main sections: general observations on metabolism and nutrition (27 pages); nature and treatment of the nutritional disturbances (76 pages), including malnutrition, fever, and the avitaminoses; the metabolic diseases and their treatment (395 pages). This, the major section, is divided into five parts: obesity; underweight; diabetes mellitus (to which 204 pages are devoted); qualitative disturbances in protein metabolism, including gout, alcaptonuria and cystinuria; disturbances in water and mineral economy. This book is necessarily a review of the present status of this subject rather than an attempt to further a new or personal point of view. The presentation is not dogmatic, and the author steers a rather conservative middle course through the maze of widely divergent theories and therapeutic practices. The volume is well printed and bound, and is sufficiently well illustrated with tables and graphs. A few case photographs are included.

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RESEARCHES IN BRITISH GUIANA, 1926-1928, ON THE BACTERIAL COMPLICATIONS OF FILARIASIS AND THE ENDEMIC NEPHRITIS; WITH A CHAPTER ON EPIDEMIC ABSCESS AND CELLULITIS IN ST. KITTS, BRITISH WEST INDIES. By A. W. Grace, M.B., and Feiga Berman Grace. No. 3 of the Memoir Series of the London School of Hygiene and Tropical Medicine. Paper. Price, 8/—. Pp. 75, with illustrations. London: London School of Hygiene and Tropical Medicine, 1931.

The bacterial complications of filariasis treated in chapter I of this monograph are lymphangitis, elephantiasis and abscesses. The material for the study of lymphangitis was obtained from abscesses and from blood cultures. The same clinical pictures were presented by all attacks of lymphangitis, the differences being only of intensity and extent. Repeated attacks, differing only in severity, commonly arose in the same situation in the same patient. In twenty-seven cases of lymphangitis resulting in an abscess, only one was found to contain any organism other than the β hemolytic streptococcus. In five positive blood cultures this streptococcus was the only organism found. *Filaria bancrofti* was not shown to be capable of causing lymphangitis. Elephantiasis was found to originate either as a gradual painless swelling or following infection. The β hemolytic streptococcus was found to be the commonest organism in all infections of elephantoid tissues. Examinations of 405 abscesses were made. Many arose without apparent cause. The commonest organism was the staphylococcus, while streptococci were found in about one third of the cases. No relation was found between the presence of *Microfilaria bancrofti* in blood and the kind of organism in the abscess. Of sixty-eight strains of β hemolytic streptococci isolated, about one fourth were associated with lymphangitis. By fermentation tests, 86 per cent belonged to the pyogenes and 11 per cent to the subacidus group. Examination of the blood of 1,000 people at night revealed an incidence of 23.1 per cent of *Microfilaria bancrofti*. A comparison of this group with a similar group studied in Cochin China showed a similarity in microfilarial rate, elephantiasis rate, incidence of enlarged inguinal glands, abscess rate, and rarity of orchitis and chyluria.

Chapter II is a study of eight strains of β hemolytic streptococci isolated from abscesses or blood. They belong to the subacidus group by fermentation, have a characteristic morphology on blood agar, and bear no serologic resemblance to subacidus strains from scarlet fever and erysipelas in England or the United States. No toxins are produced and the virulence for mice is low.

Chapter III is a study of epidemic dropsy and endemic nephritis in British Guiana. While it was impossible to state the nature of this disease, the evidence suggested that it was related to beriberi.

Chapter IV is a study of epidemic abscess in St. Kitts, British West Indies. *Streptococcus hemolyticus* β was found in all of seventeen cases from the pus of abscesses, in one blood culture out of four cases of abscess and five of cellulitis, and in 15.1 per cent of normal throats and 46.7 per cent of sore throats. There was a microfilarial incidence of 19.3 per cent in 621 individuals.

PATHOLOGIE UND KLINIK IN EINZELDARSTELLUNGEN. Herausgegeben von L. Aschoff, H. Elias, H. Eppinger, C. Sternberg und K. F. Wenckebach. BAND III: DIE LEBENSVORGÄNGE IM NORMALEN KNOCHEN, UND SEINE WUCHERUNG BEI AKROMEGALIE. Von Professor Dr. J. Erdheim, a. o. Professor an der Universität Wien. Paper. Price, 18 marks. Pp. 160, with 31 illustrations. Berlin: Julius Springer, 1931.

On the basis of a careful histologic study of costal cartilages in an acromegalic woman, aged 71, Erdheim draws interesting conclusions as to the rôle the anterior pituitary lobe plays in the growth of the skeleton. These investigations are the more valuable, as Erdheim had studied a similar problem in hypopituitarism, in which the function of the pituitary body, in contrast to what is seen in acromegaly, is diminished. In an acromegalic skeleton, especially of a ripe individual, when the growth is an accomplished fact, the phenomena of growth may be followed up anew, with all the changes in the cartilage, including the process of endochondral ossification. Erdheim covers the subject in great detail, with numerous excellent illustrations, which make the highly special topic clear and interesting. He discusses the histology, physiology, the mutual relationship of the cartilaginous structures and their changes in acromegaly. In ripe age, when the growth comes to an end, the hyperpituitary action of the anterior lobe, in acromegaly, causes unparalleled hyperplasia of the cells of the cartilage and its ground substance. This fact denotes that, in advanced age, the tissues are not exhausted but are capable of further growth, and that the hypophysis controls endochondral ossification. Its hyperfunction or hypofunction necessarily reflects on the extent of the latter, resulting either in giantism and acromegaly or in dwarfism and Fröhlich's syndrome, respectively. It is needless to say that the present treatise of the famous Viennese pathologist is, aside from other features, a valuable and authoritative contribution to the science of endocrinology.

COLLECTED PAPERS, 1904-1929. By Edwin Beer, M.D. Cloth. Price, $7.50. Pp. 827, with 252 illustrations. New York: Paul B. Hoeber, Inc., 1931.

This is a compilation of the articles written by Dr. Beer over a twenty-five year period. The author has grouped his work into five main sections with most attention placed on the genito-urinary tract. There are several features which present themselves even on hasty perusal. The reader, in glancing over the eighty-nine papers, is amazed at the diversity of subjects treated by the author and, on closer inspection, may trace certain features in the evolution of surgery during this productive quarter of a century. Dr. Beer, like many of the great surgeons, did considerable experimental work before using various appliances on the human body. The Jaboulay anastomotic button, for example, was utilized in 1905. The remainder of the papers on gastro-intestinal subjects contain many unusual and interesting case reports. Intrahepatic cholelithiasis is considered at great length after research carried out in the laboratory of Professor Weichselbaum of Vienna in 1904. This work is just as pertinent to the subject today—some twenty-seven years later. Dr. Beer early carried out certain work in the institute of Professor Chiari and this had a profound influence on the subsequent research articles reported in this volume. The discussion of kidney and bladder diseases in children is comprehensive and noteworthy. Bladder tumors are considered at great length and therapeutic measures are discussed in an exhaustive manner, with particular emphasis on electrotherapy. The remaining articles in this section are of great interest and might even serve as a textbook on genito-urinary diseases. Several features about splenic diseases and the article on "The Relief of Intractable Pain Due to Metastases Pressing on Nerve Plexuses" are valuable contributions to existing knowledge. A chapter is devoted to the value of artificial hyperemia of Bier, with the author's personal experience to enrich this discussion.

MALADIES DE L'INTESTIN. I: EXPLORATION, CONSTIPATION, DIARRHÉE, SYPHILIS, GASTRO-INTESTINALE; TRAITEMENT HYDROMINÉRAL. Par R. Bensaude, médecin de l'Hôpital Saint-Antoine. Avec la collaboration de L. Rivet et A. Cain, médecins des hôpitaux. Paper. Price, 55 francs. Pp. 144, with 97 illustrations. Paris: Masson & Cie, 1931.

The authors have assembled a series of lectures on the diseases of the intestinal tract into a comprehensive and easily understood treatise. The book should be of particular interest to the general practitioner, since it gives a concise and rather complete presentation of the commoner problems of everyday practice; the general surgeon also should get valuable assistance from it. The book is divided into chapters dealing with anoscopy, proctoscopy and sigmoidoscopy; biopsy; stool analysis; radiology of the large intestine; constipation and diarrhea and other phases of the diagnosis and treatment of diseases of the intestinal tract. Not only are the views of the author presented, but recent scientific literature is well reviewed, and each chapter has a comprehensive bibliography.

AN OUTLINE OF CHEMISTRY. By Sister M. Domitilla, B.S., R.N., Educational Director and Instructor at St. Mary's School of Nursing, Rochester, Minnesota. Paper. Price, $1.50. Pp. 198. Philadelphia: W. B. Saunders Company, 1931.

This book is a combination textbook, laboratory manual, laboratory notebook and quiz manual. According to the preface it is designed to be the basis for a course in chemistry for nurses, whether the students have had high school chemistry or not. Most of the lessons require reference reading in one or more of seventeen recorded reference works, and the lessons cannot be properly completed if this part of the work is slighted. This is an excellent feature of the book. Courses in chemistry for nurses are, however, in the main too short to be of much value. This book, together with

the reading required in the seventeen reference works, would make an excellent review for those who have had high school chemistry. This is true because the quiz questions are well thought out and many are sufficiently advanced to require a real knowledge as well as clear thinking. For these reasons the book seems unsuited for a class that has had no previous chemical training. This sort of combined textbook, laboratory and quiz manual and notebook, if used properly by teacher and by student, may be an excellent teaching method. One of its chief abuses lies in the fact that in the second or third year a single corrected book in the hands of an unscrupulous student may be the basis for one or many shirking their chemical training.

Medicolegal

Fracture of Vertebrae by Chiropractor

(Witt v. Reed (Okla.), 289 P. 291)

Reed, suffering from an "ordinary cold in his head," employed Witt, a chiropractor, to treat him. Reed alleged that he was injured by the treatment. He therefore sued the chiropractor and obtained judgment. From this judgment the chiropractor appealed to the Supreme Court of Oklahoma, where the judgment was affirmed.

Reed alleged, among other things, that the chiropractor, in disregard of the ordinary skill used by ordinarily skilful practitioners of chiropractic, negligently and unskilfully failed properly to diagnose his physical condition and unskilfully and negligently applied a greater amount of force to his, Reed's, body than was reasonably necessary under the circumstances, thereby permanently injuring him. Describing one particular treatment, Reed alleged that the chiropractor requested him to sit upright on a small bench, placed his knee against Reed's back, and, after bracing himself, reached his arm around Reed's head and gave the head a quick jerk. Immediately, Reed, the patient, suffered a sharp pain in the region of the fourth cervical vertebra. This continued to grow in intensity and severity until the evening of the following day. Then the pain became so severe that a physician was called. Reed continued to grow worse, becoming delirious and almost totally paralyzed. The second, third, fourth and fifth cervical vertebrae, Reed claimed, had been injured and dislocated and he himself permanently injured. A roentgenologist testified that roentgenograms taken by him showed almost complete destruction of the spinous process of the fourth cervical vertebra, a fracture through the body of the fifth cervical vertebra, and a callus on part of the upper surface of the sixth thoracic [sic] vertebra. The trial court instructed the jury that before it could decide for the patient it must find that the chiropractor failed to use such ordinary care and skill as was used by his school of practice and that such want of ordinary skill and care was the proximate cause of the patient's injury. The jury was further instructed that if the chiropractor bestowed on the patient such reasonable and ordinary care as a physician in the same line of practice would ordinarily have bestowed in such a case, then the patient could not recover and the verdict must be for the chiropractor. In these instructions the Supreme Court found no error. The jury, concluded the court, evidently found from the evidence that the chiropractor did not use such ordinary care and skill in his treatment of the patient as was used by practitioners of the same character.

Anesthetization as Medical or Surgical Treatment

(International Travelers' Assn. v. Yates (Texas), 29 S. W. (2d) 980)

Catherine Yates was the beneficiary of an accident policy which insured her against loss from bodily injuries to her husband, through accidental means. The policy contained a clause exempting the insurer from liability if death should result "from disease or medical or surgical treatment therefor." The insured died as the result of the administration of nitrous oxide, preparatory to an operation for a pus-infected tonsil. In a suit by the beneficiary to recover the insurance money payable under the policy, the jury, under a peremptory instruction given by the court, returned a verdict in favor of the insurer and judgment was given accordingly. On the recommendation of the Commission of Appeals of Texas, Section B, the judgment of the trial court was affirmed.

An operation is, said the Commission of Appeals, surgical treatment. It is a matter of common knowledge that an operation of any magnitude requires the administration of a local or general anesthetic and that it is customary in such cases to administer anesthetics. The stipulation in the policy by which the parties agreed that the insurer should not be liable if death resulted from surgical treatment must be construed in the light of the knowledge of this subject possessed by the parties when the policy was issued. In connection with surgical operations, anesthetics are administered for two purposes: First, to relieve the patient from pain while the operation is in progress; second, to enable the physician to operate without interference from the patient. Being used for such purposes, the giving of an anesthetic is a necessary and important part of surgical treatment.

Moreover, in a case such as the present one, the administration of an anesthetic constitutes medical treatment, within the exception in the policy. The physician was treating the insured for a disease. The treatment required by that disease, a surgical operation, would inevitably cause pain and suffering unless means were taken to prevent them. If the patient had been given an injection of morphine to ease pain due directly to the disease from which he was suffering, this would undeniably constitute medical treatment. Between such medical treatment to relieve pain caused directly by the disease, and the giving of an anesthetic to prevent pain otherwise necessarily incident to treatment to cure that disease, the Commission of Appeals was unable to see any difference. One method of treatment is as much medical treatment as the other.

Insurance: "Sound Health" Defined.—"Sound health" means the state of health free from any disease or ailment that affects the general soundness and healthfulness of the system seriously, not a mere temporary indisposition which does not tend to weaken or undermine the constitution. Sound health means freedom from serious disease or from grave, important, weighty trouble. An insurance policy which contained a provision that no obligation was assumed by the company unless on the date the policy was issued the insured was in sound health created no such obligation where, on that date, the insured had a cancer. The fact that the insured neither knew of its existence nor that he was not in sound health is immaterial.—*American Nat'l Ins. Co. v. Melton (Texas), 29 S. W. (2d) 795.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, French Lick, Indiana, September 14-19. Dr. William P. Wherry, Medical Arts Building, Omaha, Executive Secretary.

American Academy of Physical Therapy, Montreal, September 3-4. Dr. Thomas L. Smyth, 111 North Eighth Street, Allentown, Pa., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., September 14-16. Dr. M. A. Tate, 19 West Seventh Street, Cincinnati, Secretary.

American Public Health Association, Montreal, September 14-17. Dr. Kendall Emerson, 450 Seventh Avenue, New York, Acting Executive Secretary.

Colorado State Medical Society, Colorado Springs, September 15-17. Mr. Harvey T. Sethman, Metropolitan Building, Denver, Executive Secretary.

Indiana State Medical Association, Indianapolis, September 23-25. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Sec'y.

Kentucky State Medical Association, Lexington, September 7-10. Dr. Arthur T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Pontiac, September 22-24. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.

National Medical Association, Atlanta, Ga., August 17-21. Dr. Walter G. Alexander, 136 West Kinney Street, Newark, N. J., Secretary.

Pacific Northwest Orthopedic Association, Vancouver, British Columbia, September 5. Dr. Charles McClure, 322 Alder Street, Portland, Ore., Secretary.

Utah State Medical Association, Salt Lake City, September 9-11. Dr. M. M. Critchlow, Boston Building, Salt Lake City, Secretary.

Washington State Medical Association, Aberdeen, August 3-5. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Wisconsin, State Medical Society of, Madison, September 9-11. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for perr anent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

13: 649-860 (May) 1931

*Immunity to Transplantable Rat Tumors. R. E. Gardner and R. R. Hyde, Baltimore.—p. 649.
Life History of Schistosomatium Douthitti (Cort). Helen Florence Price, Ann Arbor, Mich.—p. 685.
Vaccinia: Susceptibility of Mice and Immunologic Studies. M. J. Rosenau and H. B. Andervont, Boston.—p. 728.
Sex Differences in Physical Impairments of Adult Life. Comparison of Rates Among Men and Women, Based on 112,618 Medical Examinations by Life Extension Institute. R. H. Britten.—p. 741.
Upper Respiratory Disease (Common Cold) and Weather: Baltimore, 1928-1930. W. M. Gafafer, Baltimore.—p. 771.
*Density of Population, Mortality and Certain Other Phenomena in Japan. T. J. Leblanc, Sendai, Japan.—p. 781.
*Field Treatments of Ascariasis, Ancylostomiasis and Trichuriasis with Hexylresorcinol. P. D. Lamson, H. W. Brown, B. H. Robbins and C. B. Ward.—p. 803.
Further Studies on Immunology of Pneumococcus. W. A. Jamieson and H. M. Powell, Indianapolis.—p. 823.
Heterophile Antigen in Pneumococci. G. H. Bailey and M. S. Shorb, Baltimore.—p. 831.

Immunity to Rat Tumors.—Gardner and Hyde state that preliminary treatment of a susceptible strain of rats with fresh whole blood from the normal chicken, collected under sterile conditions, was effective in producing resistance to a transplantable spindle cell sarcoma. Complete inhibition of the grafts was produced in 86 per cent of the animals treated, as compared with 19 per cent negative results in the controls. In the grafts that did succeed in developing, marked retardation of growth was observed. Similar treatment of a susceptible strain of rats proved effective against a medullary carcinoma of high proliferative vigor, as shown by the failure of the grafts to develop in 39 per cent of the treated animals, while the controls all gave positive takes. Considerable restraint of growth of those that did succeed in taking was produced by the treatment. A susceptible strain of rats treated with nonhemolyzed, heat-devitalized whole blood from the normal chicken proved effective, but to a much less extent than fresh normal chicken blood, in producing resistance to the sarcoma in 77 per cent of the animals treated, as compared with 50 per cent negative reactions in the controls. Treatment of a susceptible strain of rats with nonhemolyzed heat-devitalized whole chicken blood produced a slight immunity to the carcinoma. Complete inhibition of the grafts resulted in only 6.6 per cent of the animals treated, with slight retardation of growth in those developing tumors, while the controls developed in 100 per cent of the cases. A susceptible strain of rats treated with whole dried blood from the normal chicken, collected and desiccated under sterile conditions, was not refractory to the implantation of the sarcoma and the carcinoma. The feeding of fresh whole blood daily to susceptible strains of rats failed to produce any resistance to implantations of the sarcoma and carcinoma. Preliminary treatment of a susceptible strain of rats, with blood-free chick embryo skin proved somewhat effective in producing resistance to the sarcoma as shown by 63 per cent failing to develop in the experimental group as compared to 49 per cent in the controls. No immunity, however, was produced to the carcinoma by the same treatment. A susceptible strain of rats treated with vaccine virus proved effective in producing resistance to the sarcoma. The immunity prevented the taking of the grafts in 75 per cent of the animals treated, as compared to 14 per cent negative in the controls. The growth of those which did succeed in developing was restrained considerably. Negative results were obtained with vaccine virus in susceptible strains against the carcinoma.

Density of Population in Japan.—Using census material, Leblanc made a study of the relation between density of population and certain vital phenomena, such as births, stillbirths, deaths, marriages and divorces, in Japan for the year 1925. To test the presence of any relationship, a comparison of rates as well as the method of partial correlation was used. Both of these methods failed to show any evidence that density of population affects in a measurable degree the biologic processes of the Japanese people, and this in spite of the fact that, in Japan, density, measured in terms of arable land, is probably the highest in the world. These observations are contrary to the suggestion that the relatively high mortality in Japan is related to the density of population.

Hexylresorcinol as Anthelmintic.—Hexylresorcinol was given by Lamson and his associates to 1,500 patients as an anthelmintic and caused no toxic symptoms. A few patients complained of slight gastric irritation, and an occasional patient vomited. This was probably due to the irritant action of hexylresorcinol on the gastric mucosa caused by the interaction of this substance in concentrated form with the protein of the superficial epithelium. On account of the insolubility of hexylresorcinol, this reaction is entirely superficial. When a second treatment was given within a day or two after the initial dose, no patients objected in any way to this second administration, which is the best indication that the drug caused no disturbance of note. Hexylresorcinol was best administered in hard gelatin capsules. Doses of 1 Gm. were given to patients of 12 years of age and above, from 0.6 to 0.8 Gm. to those from 6 to 12 years, and doses of 0.4 Gm. to very young children. In adults, doses below 0.5 Gm. were less effective. The efficacy of hexylresorcinol is greatly reduced if food is taken shortly before or after treatment. It was therefore found best to treat in the morning, allowing no breakfast or food for four or five hours afterward. Full therapeutic doses removed between 90 and 100 per cent of *Ascaris* and hookworm in controlled cases, so that larger doses seemed unnecessary. In this group of field treatments an average reduction of 90 per cent *Ascaris*, 85 per cent hookworm and 55 per cent *Trichocephalus* was obtained with full therapeutic doses. This method of administering hexylresorcinol in hard gelatin capsules would be almost ideal except that this substance reacts with the gelatin after a time. Work is now being undertaken to find a stable form of administration for clinical use.

American Journal of Surgery, New York

12: 213-402 (May) 1931

*Research into Formation of Autosynthetic Cells: with Especial Reference to Fertilization, Production and Growth of Cancer Cells and Cause of Fatty Degeneration. G. W. Crile, Cleveland.—p. 213.
Diagnosis and Treatment of Acute Craniocerebral Injuries. A. Ochsner, New Orleans.—p. 222.
Radium Therapy of Tumors of Genito-Urinary Tract. B. S. Barringer, New York.—p. 243.
*Allergy as Cause of Gastro-Intestinal Disorder. W. W. Duke, Kansas City, Mo.—p. 249.
Management of Gastric and Duodenal Ulcer: Indications for Medical and Surgical Treatment. J. L. deCourcy, Cincinnati.—p. 254.
Partial Gastrectomy in Hands of General Surgeon. J. M. Meherin, San Francisco.—p. 260.
Mesenteric Thrombosis. R. Metcalfe, San Francisco.—p. 266.
Treatment of Intestinal Parasitism by Intraduodenal Instillations. S. R. Simon, New Orleans.—p. 267.
Resection of Kidney. D. M. Davis, Phoenix, Ariz.—p. 272.
Complications of Gonorrhea; Periurethral Abscess, Stricture, Arthritis. M. F. Campbell, New York.—p. 277.
Fascia Anchor. W. D. Anderson, Portland, Maine.—p. 282.
Indications for Excision and Gastrectomy and Results Following Operation. A. G. Brenizer, Charlotte, N. C.—p. 284.
Strains and Sprains. A. J. Buka, Pittsburgh.—p. 290.
Postoperative Management of Appendiceal Peritonitis. V. G. Burden, Philadelphia.—p. 294.
Spinal Anesthesia Used as Preoperative Index to Ganglionectomy in Megacolon. W. J. Cassidy and D. Selkin, Detroit.—p. 299.
*Spinal Cord Compression: Tumors and Allied Nontraumatic Conditions. W. M. Craig, Rochester, Minn.—p. 303.
Practical Proctology. S. G. Gant, New York.—p. 314.
Hyperplastic Proctitis (Rectal Granuloma). C. L. Martin, Chicago, and W. C. Hueper, Philadelphia.—p. 321.
Vascular Diseases of Extremities: III. Thermic Gangrene. A. M. Graves, New Orleans.—p. 324.

Autosynthetic Cells.—Crile discusses facts that would be harmonized by the conception that cancer cells are reduced normal cells; that their success in growth is due to the fact

that the cells of the host are differentiated; that their energy is spent within the cell in function while the cancer cell, having no inner function, expends its energy in growth only. The cancer cell, like the cell of the host, is made up of proteins, lipoids and electrolytes, the chief difference between a cancer cell and the corresponding normal cell being that the energy of the normal cell is used principally in the performance of the specific work for which the cell was differentiated, while the cancer cell uses its energy principally for growth and little or not at all for function. From the organs of freshly killed normal animals, he extracted the lipoids and proteins of the brain and obtained the ash. By mixing together the brain lipoids, the brain proteins and a solution of the brain ash, or of the electrolytes contained in the brain, the process of fertilization in nature by the uniting of the spermatozoon and the ovum was crudely imitated. On observation of this mixture of brain lipoid, brain protein and solution of electrolytes under the microscope, he noted immediate activity of organization. Cell-like forms appeared and grew slowly. They multiplied, sometimes by budding and sometimes by direct division. These cells were nucleated; they took vital stains; they consumed oxygen; they gave off carbon dioxide, and they produced urea. Under a high magnification, free movement of granules and a movement not unlike the brownian movement were seen. Their activity was increased by electrical stimulation. Some of these have continued as active cells for four months. The author believes that autosynthetic cells and cancer cells alike are cells that have been reduced below the level of specialized function but lie above the level of fatty degeneration. That is, the autosynthetic cell and the cancer cell, like the fertilized ovum, lie in the zone of growth alone.

Allergy as Cause of Gastro-Intestinal Disorder.—Duke believes that allergy is important in relation to the gastro-intestinal tract in that disturbances caused by allergy can simulate organic and functional disease due to other causes and also, through causing edema of the tissues, muscle contraction and anomalies in secretion, can actually precipitate organic disease. Allergy in the gastro-intestinal tract is more commonly caused by foods than by drugs, serums, insects and parasites. A reaction similar in every sense to those caused by foods or other material agents can be caused by sensitiveness to the effect of heat and effort or to the effect of cold. Pollen, epidermal substances, dust, smoke, volatile oils, and so on, which commonly cause nasal and bronchial symptoms, are rarely absorbed in sufficient quantities to produce reaction in the gastro-intestinal tract. The diagnosis of gastro-intestinal allergy can be made with relative certainty. If the condition is correctly diagnosed, treatment is likely to be brilliantly successful.

Spinal Cord Compression.—Of 312 cases of spinal cord compression analyzed by Craig, 223 tumors were found which did not involve the spinal cord except by compression; these were classified as extramedullary and were divided again into 156 intradural and 67 extradural tumors. There were also 89 tumors that involved the spinal cord and were classified as intramedullary. Included in the group of 67 cases of extradural tumors compressing the spinal cord were lesions arising from bone, intervertebral disks, extradural fat, spinal nerves and blood vessels, as well as unsuspected metastatic malignant lesions. A preoperative diagnosis of bony extradural lesion may often be made by roentgen examination; likewise, it is possible to make a presumptive diagnosis of metastatic malignant lesion when the primary lesion can be determined. The intradural extramedullary series of tumors comprised the largest group and carried the most favorable prognosis. These lesions take their origin from the fibroblastic structures of the meninges and the vessels of the meninges, or they are projected into the subarachnoid space from without the dura or from within the spinal cord. The two types of tumor predominating are the endothelioma, or meningeal fibroblastoma, and the neurofibroma. In this series, about half of the intradural extramedullary tumors proved to be endotheliomas, and about a third were neurofibromas. In an analysis of the intramedullary lesions, eighty-nine cases were reviewed. Tissue was available in only sixty-two cases. Tumors arising from the cord and comprising the group of gliomas predominated, but also benign encapsulated tumors that could be removed completely were found. In a number of cases in which tissue was not removed, palliative relief was obtained by means of decompression, coincidental with laminectomy. In view of the fact that laminectomy can be performed with minimal risk, exploration can be carried out in many atypical cases of compression of the spinal cord for palliative as well as for diagnostic purposes. In a high percentage of cases of compression of the spinal cord, a differential diagnosis between inflammatory and neoplastic lesions can be ascertained preoperatively by means of roentgen examination, complete neurologic study including examination of the cerebrospinal fluid, and the use of iodized poppy-seed oil when indicated.

Archives of Pathology, Chicago

11: 687-839 (May) 1931

*Effects of Fat-Free Diet on Structure of Kidney in Rats. V. G. Borland and C. M. Jackson, Minneapolis.—p. 687.
*Iodine Deficiency and Goiter: Influence of Diet Poor in Iodine on Thyroid Gland in White Rats. C. A. Hellwig, Wichita, Kan.—p. 709.
*Effect of Exposure to Ultrahigh Frequency Field on Growth and on Reproduction in White Rat. A. Knudson and P. J. Schaible, Albany, N. Y.—p. 723.
*Physiologic and Biochemical Changes Resulting from Exposure to an Ultrahigh Frequency Field. A. Knudson and P. J. Schaible, Albany, N. Y.—p. 728.
*Morphologic Changes in Animal Tissues Due to Heating by Ultrahigh Frequency Oscillator. V. C. Jacobsen and K. Hosoi, Albany, N. Y.—p. 744.
*Hypertension in Relation to Blood Vessels of Medulla Oblongata. C. R. Tuthill, Buffalo.—p. 760.
*Rate and Location of Removal of Bacteria from Blood in Human Disease. R. Ottenberg, New York.—p. 766.

Effects of Fat-Free Diet on Structure of Kidney in Rats.—Borland and Jackson demonstrated characteristic renal lesions in rats reared on Burr's highly purified diets, which are practically fat free but otherwise adequate. The most striking and characteristic renal lesion is the calcification in the cells of some renal tubules and in necrotic areas of the renal medulla. In extreme cases there is complete disintegration of the apical region of the pyramid. Various forms of renal epithelial degeneration and fatty or lipoidal changes also occur to a variable extent. These may or may not be associated with the calcification. In the medulla, large quantities of fatty or albuminous material may accumulate, forming casts in the lumens of the tubules and especially in the papillary ducts. An atypical (uncornified) hyperplasia is often found in the renal pelvic epithelium. This usually appears most pronounced when necrosis of the papilla is also present. Slight focal infiltration by round cells is found in the test rats but no more frequently than in the normal controls. The inclusion bodies incidentally noted in the cortical epithelium of some of the controls apparently have no relation to the disorder caused by a deficiency of fat in the diet. The addition of from 2 to 20 per cent of lard or of slight amounts of cod liver oil to the diet usually prevents or cures the renal disorder, at least to a large extent. Especially the calcareous degeneration and casts are almost completely eliminated. Various other types of fat (such as corn oil, olive oil and methyl linolate) usually appear somewhat less beneficial to the kidney, in which some of the lesions persist, although the general condition of the body is cured or greatly improved. The concentration of dietary protein, within the range used, shows no definite relation to the incidence or to the severity of the renal lesions observed.

Iodine Deficiency and Goiter.—Attempts made by Hellwig to produce goiter in white rats by feeding a diet poor in iodine gave only negative results. Excess of calcium in the drinking water and a low intake of iodine caused a marked epithelial hyperplasia of the thyroid. Drinking water rich in calcium and a diet rich in iodine produced small colloid goiters. Insufficiency of iodine was shown not to be the essential cause of goiter.

Effect of Exposure to Ultrahigh Frequency Field on Growth and Reproduction in White Rat.—Knudson and Schaible assert that, since the development of a high frequency oscillator for the production of artificial fever in man, it has become of increasing importance to know the biologic reactions produced by such an agent. They accordingly planned an investigation to determine the effect of exposure to a high frequency field on growth and reproduction in the white rat. It was found that exposure of young rats to an ultrahigh frequency field for periods of from one-half to one hour daily and raising their body temperature to 40.5 C. (104.9 F.) does not seem to

retard their growth appreciably. The reproductive organs in the male and female rats are not appreciably affected, so that there is no loss in power to breed. Repeated exposure of rats to an ultrahigh frequency field in which the body temperature is raised to 40.5 C. does not produce any abnormal pathologic lesions.

Effects of Ultrahigh Frequency.—According to Knudson and Schaible, the body temperature of dogs can be raised to any desired point by exposure to an ultrahigh frequency field. The temperature returns to normal quite rapidly unless the animal has been heated above 42 C. (107.6 F.). Animals heated above 42.5 C. (108.5 F.) for any great length of time do not survive treatment. Exposure of animals to an ultrahigh frequency field results in loss of weight, which is dependent somewhat on the length and intensity of treatment. There is also a decrease in blood volume amounting in some experiments to as much as 25 per cent. The concentration of the blood was also evidenced by the increase in cell volume and hemoglobin. Weight and blood volume usually return to normal within twenty-four hours. Raising the temperature of animals to 41.7 C. (107 F.) does not produce any great change in hydrogen ion content of the plasma, although there is a tendency toward a condition of alkalosis. With higher temperatures, the tendency is toward a condition of acidosis, apparently caused by great increase in the production of lactic acid. The increase in lactic acid is probably due to greatly increased tissue metabolism resulting in a tissue anoxemia. Changes in the chloride, total protein and total base are accounted for by the dehydration. Bicarbonate was greatly reduced, owing to excessive pulmonary ventilation with rise in body temperature. Changes in the inorganic phosphorus were somewhat variable, although with a maximum temperature to 41.7 C. there is a marked reduction. Nonprotein nitrogen of the blood is generally increased; in some instances the increase is over 200 per cent. Urea nitrogen, creatinine and amino-acid nitrogen are also increased. These increases are accounted for by the increased metabolism resulting from rise in temperature and by the oliguria. The blood sugar content in most of the experiments shows an increase, in some cases amounting to as high as 150 per cent. The greatest increase in blood sugar occurs in those experiments in which the p_H has been lowered the most. There is an increase in both the red blood cells and the total white cells. Besides the increase in red cells there is in many instances a marked increase in immature forms of red cells, suggesting a stimulation of the hematopoietic tissues.

Ultrahigh Frequency and Morphology.—Jacobsen and Hosoi describe the effects on animal tissues of exposure in the electrostatic field of a high frequency oscillator. Twenty-three dogs, twenty-seven adult white rats and three guinea-pigs were used in the experiment. A marked hyperthermia was produced in the animals, the amount of temperature increase being controllable by altering either the voltage or the distance between the plate electrodes of the apparatus. The morphologic changes occurring in the tissues were congestion of the organs, peripheral hyperemia, cloudy swelling, fatty degeneration, dehydration, glycogen depletion, focal hemorrhages, especially in the gastrointestinal tract, epithelial hyperplasia in the parenchymatous organs and stimulation of the bone marrow. Following prolonged periods of heating, degenerative lesions occurred in the male germinal epithelium. From a morphologic point of view the alterations observed differ but little from the effects of fever produced by various other methods, but the ease with which the temperature can be controlled in the high frequency field of this apparatus and the character of some of the tissue responses suggest possible therapeutic applications.

Hypertension in Relation to Blood Vessels of Medulla Oblongata.—Tuthill studied the blood vessels of the region of the obex of the medulla oblongata in twenty-four cases of hypertension of varying duration and in thirty-five cases of normal blood pressure. In twelve cases of hypertension, arteriosclerosis of the vessels of the medulla oblongata was found, but in the other twelve cases slight or no arteriosclerosis of these vessels was present. Among the cases of normal blood pressure, six showed arteriosclerosis of the vessels of the medulla oblongata. However, in none of the cases was arteriosclerosis confined solely to the vessels of the medulla oblongata. No proof was found for the theory (Bordley and Baker) that hypertension is the result of arteriosclerosis of the vessels of the medulla oblongata.

Removal of Bacteria from Blood.—Ottenberg presents observations to show that, in cases of sinus thrombosis, bacteria are rapidly filtered out of the circulating blood. Reasons are given for believing that, in many of the cases, bacteria are fed into the blood stream from the lesion in the vein somewhat steadily over a period of time rather than in momentary "showers." Observations on the number of bacteria at any moment in the blood of an artery and a vein of an extremity show that there is little or no filtration of bacteria by the peripheral tissues.

Journal of Infectious Diseases, Chicago

48: 419-509 (May) 1931

*Relation of Copper and Iron to Production of Toxin and Enzyme Action. A. Locke and E. R. Main, Chicago.—p. 419.

*Thermal Death Point: I. Spores of Clostridium Tetani. T. J. Murray and Mary R. Headlee, New Brunswick, N. J.—p. 436.

*Id.: II. Spores of Bacillus Anthracis. T. J. Murray, New Brunswick, N. J.—p. 452.

*Id.: III. Spores of Clostridium Welchii. Mary R. Headlee, New Brunswick, N. J.—p. 468.

*Correlation of Occupation with Serologic Reactions for Brucella Abortus. A. Thomsen, Copenhagen, Denmark.—p. 484.

*Otitis Media and Mastoiditis Due to Streptococcus Epidemicus. I. Pilot, M. Lampert and D. J. Davis, Chicago.—p. 498.

*Tonsillectomy in Carriers of Streptococcus Epidemicus. I. Pilot and D. J. Davis, Chicago.—p. 501.

*Sporadic Cellulitis and Abscess Due to Streptococcus Epidemicus. I. Pilot and D. J. Davis, Chicago.—p. 505.

Relation of Copper and Iron to Production of Toxin and Enzyme Action.—According to Locke and Main, the neurotoxins appear to be dispersions of bacterial protoplasm containing deeply embedded fragments of a positively charged (cationic) respiratory substance having copper as the predominant catalyst. They resemble the respiratory enzymes of the oxidase type and the proteases of the p_H 8 erepsin type in being inactivated by sodium cyanide and cysteine. The hemotoxins appear to contain fragments of negatively charged (anionic) respiratory substance having ferrous iron as the predominant catalyst. They resemble the respiratory enzymes of the dehydrogenase type and the proteases of the p_H 4 papain type, which are not inactivated by sodium cyanide or cysteine but are (with the possible exception of dehydrogenase) inactivated by the cupric ion.

Spores of Clostridium Tetani.—Murray and Headlee determined that the effective temperatures for the destruction of spores of *Clostridium tetani* in physiologic solution of sodium chloride are 105, 100 and 95 C. At 105 C. the time varied between five and ten minutes, at 100 C. between ten and twenty-five minutes, and at 95 C. between twenty-five and sixty minutes. At 95 C. three strains resisted the sixty minute heating. Effective temperatures for dry spores heated in the absence of moisture with the six strains studied were 140, 135, 130 and 125 C. At 140 C. the time varied from five to fifteen minutes, at 135 C. from five to twenty-five minutes, at 125 C. from twenty to forty minutes. Dried spores heated under moist conditions showed no increased resistance, the effective temperatures being 105, 100 and 95 C. In many of the strains, drying decreased the thermal resistance. Drying of the spores of *Clostridium tetani* on sand decreased the number of viable spores and also tended to decrease their resistance when heated under moist conditions.

Spores of Bacillus Anthracis.—Murray states that, although the literature is rich in references to the effect of disinfectants on the spores of *Bacillus anthracis*, the effect of disinfection on hair, wool and hides infected with *B. anthracis* and the longevity of the spores in water, soil and culture mediums, the literature dealing with the effect of heat on the spores of *B. anthracis* is rather meager. In his studies with seventeen strains of *B. anthracis* he found that effective temperatures for the destruction of its spores in physiologic solution of sodium chloride were 105, 100, 95 and 90 C. At 105 C. the time varied from five to ten minutes, the spores of most of the strains being destroyed in five minutes; at 100 C. from five to ten minutes, most of the spores being destroyed in ten minutes; at 95 C. from ten to twenty-five minutes, and at 90 C. from fifteen to forty-five minutes. Effective temperatures for dry spores heated in the absence of moisture were 135, 130, 125 and 120 C. At 135 C. the time varied from five to ten minutes; a

130 C. it ranged from fifteen to twenty minutes, at 125 C. it was twenty-five minutes, and at 120 C. it varied from forty to forty-five minutes. Dried spores heated under moist conditions showed no increased resistance, the effective temperatures being 100, 95 and 90 C.

Spores of Clostridium Welchii.—Headlee's study of the thermal death time of *Clostridium welchii* was undertaken as a part of the project covering the thermal resistance of *Clostridium tetani, Clostridium welchii* and *Bacillus anthracis. Clostridium welchii* is one of the most commonly occurring pathogenic anaerobes; nevertheless there have been no studies of its thermal death time from the point of view of recent methods. The authors found that the resistance of the spores of *Clostridium welchii* in 0.85 per cent solution of sodium chloride was thirty minutes at 90 C., ten minutes at 95 C. and five minutes or less at 100 C. Spores in solution of sodium chloride at increasing concentration of the salt to 4 per cent showed an optimum resistance at 3 per cent. At 10 per cent there was a definite decrease in resistance. Over a period of two months, spores changed little in thermal resistance when kept at icebox temperature for the latter half of the period. Dry spores were found more resistant to heat than wet spores. They had a resistance of fifteen minutes at 130 C. and of five minutes or less at 140 C.

Brucella Abortus.—Two hundred and seventy-two persons whose occupations bring them into contact with cattle were examined serologically by Thomsen for agglutinins and complement fixing bodies for *Brucella abortus*. A preliminary check of sixty-one healthy persons and nonfebrile patients in other occupations did not show reactions. The results of the examination of the 272 were as follows: Of sixty-five veterinary surgeons in rural practice for more than one year, sixty-one (94 per cent) showed positive reactions. The results of complement fixation tests were far more frequently positive than those of agglutination tests. An entire class of young veterinarians, tested before their final examinations, did not give reactions. Another class, eighteen in all, were examined five months after leaving school; fifteen reacted with titers equal to those in cases of undulant fever. Only one had clinical undulant fever. A third class of twelve (eleven tested), examined about a year after leaving school, gave reactions correlating with those of the preceding group. Those who did not give reactions were not handling cattle. Of sixteen bacteriologists working with *Brucella*, ten gave positive reactions (63 per cent). Of twenty-one chief cattle attendants at farms where contagious abortion existed, thirteen (62 per cent) showed positive reactions. Of twenty-five lesser employees in similar work at these farms, six (24 per cent) gave positive results. Of twenty-three owners of such farms, nine (39 per cent) gave positive reactions. Among twenty milkmaids at similar farms, only one showed a positive reaction. No reactions were noted among ten milk tasters of large Copenhagen dairies. Of five inspectors (veterinarians) of milk and stables, one gave a positive reaction. He had, however, formerly engaged in rural practice. Five of twenty-five butchers (20 per cent) were found to give positive reactions. Inspecting veterinarians at slaughterhouses showed four with positive serums in twelve subjects examined. All four had formerly practiced among cattle. It would appear that the treatment and care of sick animals infected with *Brucella abortus* are primarily responsible for the reactions noted in the persons observed and, presumably, for the infections. The flesh of killed animals, particularly new-born calves, would seem to be rather remotely connected. Milk has no proved connection with the reactions. Since undulant fever rarely correlates with the titer of the serum, the usual strains of *Brucella* are presumably not pathogenic for man. Yet it is unequivocal that pathogenic strains do occur, and thus vaccination is indicated for those likely to be directly exposed. The interpretation of positive results in diagnostic serologic tests for *Brucella* among those in occupations connected with cattle or with *Brucella* should be made with care, since the serums of healthy persons thus employed may give positive reactions.

Otitis Media and Mastoiditis.—Pilot and his associates describe six cases of otitis media and four of mastoiditis due to *Streptococcus epidemicus*. The complications caused by this streptococcus may follow sporadic sore throat, scarlet fever or mild infections of the upper respiratory tract.

Tonsillectomy.—Pilot and Davis state that tonsillectomy in carriers of *Streptococcus epidemicus* causes complete and rapid disappearance of this organism from the throat. Persons presenting sporadic septic sore throat, otitis media and mastoiditis often become carriers of *S. epidemicus* in tonsillar crypts. *S. epidemicus* may cause acute infection in tonsillectomized persons, but the organisms rapidly disappear during convalescence. It was found in the crypts of 13.8 per cent of 506 pairs of extirpated tonsils. All of the patients gave a history of sore throat. Many whose tonsils revealed *S. epidemicus* had cervical adenitis, arthritis or arthritic pains. The removal of the tonsils in these patients resulted in marked clinical improvement.

Sporadic Cellulitis and Abscess.—Pilot and Davis report seven cases of cellulitis and deep subcutaneous abscess caused by *Streptococcus epidemicus*, a variety of hemolytic streptococci. They state that abscesses in the cervical lymph nodes may follow sore throat due to this organism. Peritonsillar abscess, suppurative otitis media, mastoiditis, meningitis and empyema may also be caused by *S. epidemicus*. These infections appear to be sporadic and not associated with milk-borne epidemics of sore throat.

Journal of Urology, Baltimore

25: 461-530 (May) 1931

Carcinoma of Penis. F. H. Colby and G. G. Smith, Boston.—p. 461.
*Sinus Tract Carcinoma. E. M. Watson, Buffalo.—p. 469.
*Study of Vesicorenal Reflexes and of Possibility of Renorenal Reflex. J. I. Farrell, Cleveland.—p. 487.
*Tuberculosis of Bladder: Necropsy Findings of Unusual Case, Terminating in General Peritonitis from Perforated Tuberculous Ulcers of Ileum. H. W. Ferris, New Haven, Conn.—p. 497.
*Perinephric Abscess: Cases. H. C. Rolnick and H. J. Burstein, Chicago.—p. 507.
Postoperative Foreign Bodies in Bladder. J. F. Baldwin, Columbus, Ohio.—p. 513.
Crochet Needle in Bladder with Secondary Perforation. J. Schwartz, New York.—p. 515.
Apparatus for Pneumovibratory Massage of Prostate. A. L. Welhaven, New York.—p. 519.
Scrotal Suspensory Ice Bag. F. W. Harrah, Columbus, Ohio.—p. 525.
New Irrigating Connection for Cystoscopes. W. L. Ross, Jr., Tacoma, Wash.—p. 529.

Sinus Tract Carcinoma.—Watson reports two cases of a primary carcinoma of a suprapubic sinus, each following many years after a stricture of the urethra for which a suprapubic cystotomy had been done. One of these was traumatic, the other of gonorrheal origin. In each instance, secondary infection had been present for several years. One of the patients, treated by excision, radium and high voltage roentgen irradiation, died of generalized carcinoma in three months. The other, treated by radium implantation and high voltage roentgen irradiation, lived two years and died of uremia, following an operation for hernia, without clinical or palpatory evidence of carcinoma.

Study of Vesicorenal Reflexes.—By experiments which showed that the urinary flow was inhibited by stimulation of the pelvic nerve except after section of the splanchnic nerve, Farrell demonstrated that a reflex relation exists between the bladder and kidneys. When the bladder is distended, the urinary flow is diminished—probably a protective mechanism to prevent pressure within the renal pelvis. In clinical cases of urinary retention, when the bladder is chronically distended, this reflex apparently is destroyed, since in many of these cases a hydroureter and hydronephrosis develop. In this connection, the absence of a flow of urine from the ureters during micturition is interesting. Presumably this is due to contraction of the ureters to prevent any backflow of urine. Clinically, a reflex inhibition of urinary secretion has been observed following operations on the kidney and on other organs and, experimentally, distention of one renal pelvis produces pain, a decrease in the blood pressure, and inhibition of the urinary flow on the opposite side. While it is probable that this inhibition is the result of vasomotor changes within the kidney, nevertheless the author believes that his experiments demonstrate clearly that it is possible to influence the urinary secretion of one kidney by distending the pelvis of the opposite kidney. If this interpretation is correct, it would serve to substantiate the existence of a renorenal reflex.

Tuberculosis of Bladder.—Ferris reports the necropsy observations in a case of tuberculosis of the bladder unaccom-

panied by other demonstrable tuberculous involvement of the genito-urinary tract. There were also present an acute necrotizing and exudative pulmonary tuberculosis and an acute ulcerative tuberculous enteritis with multiple perforations causing a general peritonitis.

Perinephric Abscess.—In an analysis of the records of fifty-five cases of perinephric abscess, Rolnick and Burstein found that the most valuable diagnostic aid was diagnostic puncture and aspiration. This procedure has been condemned by one author because of the danger of needling the kidney and spreading the infection into it. This objection seems theoretical in view of the fact that most authorities are of the opinion that the vast majority of metastatic perinephric abscesses are secondary to extension from metastatic infarcts of the kidney to the perinephric tissues. Of twelve cases in which perinephric abscess was noted, puncture and aspiration were positive in eight and determined the diagnosis. It was negative in one case that showed a large amount of pus at operation and in another previously mentioned, which cleared up without operation. In two cases in which puncture was negative, the absence of perinephric abscess was later confirmed on cystoscopy in one case and at operation in another. The authors are impressed with the value of diagnostic puncture as an early aid in diagnosis.

Kansas Medical Society Journal, Topeka

32: 145-180 (May) 1931

Early Diagnosis and Treatment of Acute Anterior Poliomyelitis. B. L. Elliott, C. R. Ferris and P. F. Stockey, Kansas City, Mo.—p. 145.
Pyelitis. N. F. Ockerblad, Kansas City, Mo.—p. 149.
Dermoid Cyst of Ovary Combined with Large Pseudomucinous Cyst. R. R. Wilson and T. J. Sims, Kansas City, Mo.—p. 151.
Myxedema: Difficulties of Diagnosis, Difficulties of Treatment. L. Clendening, Kansas City.—p. 155.
Fractures of Femur. C. B. Francisco, Kansas City.—p. 158.
Water and Salt in Surgery. T. G. Orr, Kansas City.—p. 159.
Hemoglobin Standard. C. F. Nelson, Kansas City.—p. 162.
Obstruction of Small Intestine Due to Neoplasm. C. C. Nesselrode, Kansas City.—p. 165.
Position of Surgery and Radium in Treatment of Oral Cancer. E. C. Padgett, Kansas City.—p. 167.
Tribromethyl Alcohol (Avertin) as Rectal Anesthetic. L. W. Augle, Kansas City.—p. 172.

New Jersey Medical Society Journal, Orange

28: 391-466 (May) 1931

*Preventing the Transmission of Syphilis by Control of Infectiousness. J. H. Stokes, Philadelphia.—p. 391.
*Value of Blood Sedimentation Test in Gynecology. J. Huberman, Newark.—p. 403.
*The Acute Abdomen. J. B. Deaver, Philadelphia.—p. 407.
Ruptured Gastric Ulcer: Rôle of Internist. E. C. Klein, Jr., Newark.—p. 412.
Acute Perforation of Peptic Ulcers. R. A. Schaff, Newark.—p. 417.
Treatment of Perforated Peptic Ulcer. H. A. Schulte, Newark.—p. 421.

Preventing Transmission of Syphilis by Control of Infectiousness.—In a summary of the facts of infectiousness in syphilis, Stokes asserts that the more recent the infection, the more dangerous. The blood Wassermann reaction is not a guide to infectiousness or noninfectiousness. It may be negative with infectious lesions present and positive in noninfectious cases. The most infectious lesions are chancre, mucous patch, condyloma and moist papule (flexures). The places to look for infectious recurrent lesions in inspection are the lip (outer and inner surface), angles of the mouth, faucial pillars and tonsils, sides and bottom of the tongue, the axilla, nipples, inguinal folds, labia, penis, scrotum and anus (hemorrhoids). All open or eroded lesions in early syphilis are dangerous. Infection is also transmitted by semen and by benign nonsyphilitic lesions (herpes) in patients with syphilis. Syphilis is transmitted mainly by intimate contact of moist surfaces; i. e., by kissing or sexual intercourse. Moist articles and discharge-bearing dressings and articles of common use can also carry infection. Thorough washing in hot water and soap disinfects contaminated objects. The additional precaution of boiling dishes, utensils and such articles as douch nozzles and instruments in solution of sodium bicarbonate may be used. Dry objects and dry (not crusted) lesions are noninfectious. Pyogenic infection reduces the infectiousness of the local lesion. Trauma by an infected object (the knuckle striking the teeth, a needle prick) makes infection almost certain; it may be hematogenous and without chancre. Transfusion is a means of transmitting syphilis. A single negative blood Wassermann test in the donor does not protect. There is a distinct infectious relapsing type of syphilis that must be watched for. To a patient with this type of syphilis, no assurances can be made. Local irritation, such as is caused by dirt, sweat, discharges, friction (intercourse) and tobacco (smoked or chewed), favors infectious recurrence. Time diminishes the infectiousness of syphilis. After five years, few patients are infectious; desultory, noncurative treatment, with relapses, may prolong infectiousness many months or years. No treatment can guarantee the noninfectiousness of syphilis indefinitely. Secondary relapses have been seen with dementia paralytica after twenty years. Inadequate treatment favors infectious relapse. Late syphilids are not infectious even though open lesions are present. They should not be confused with recurrences. Mercury does not control infectiousness. Bismuth, while more effective in this respect than mercury, is probably less so than arsphenamine. Arsphenamine controls infectiousness, probably as long as one month from the last dose.

Value of Blood Sedimentation Test in Gynecology.—Huberman calls attention to the importance of correlating the sedimentation reading with the history, the clinical picture and the pelvic signs in gynecology. It is easier to do a sedimentation test than to make a blood count, and one gets more information out of a sedimentation test than from a blood count in the presence of a latent infection. This applies not only in gynecology but to a variety of other pathologic conditions in other branches of medicine.

Acute Conditions of Abdomen.—Deaver emphasizes the fact that in no emergency is clinical acumen a more valuable asset than in acute conditions of the abdomen. Much as he values the aid of the laboratory in the diagnosis of certain diseases, he believes that in an acute abdominal disease, such as a perforated appendix, perforated gallbladder, perforated duodenal ulcer, ruptured ectopic pregnancy or a twisted pedicle of an ovarian cyst, the laboratory has little if any place in the diagnosis, with the exception of the blood picture and the sedimentation test in acute pelvic infection. The diagnosis depends most on clinical facts and clinical experience and, since diagnosis to a large extent affects prognosis, it is sound clinical knowledge that counts in the end.

Yale J. of Biology & Medicine, New Haven, Conn.

3: 387-456 (May) 1931

Yale's First Ophthalmologist: The Reverend Peter Parker. E. M. Blake, New Haven, Conn.—p. 387.
Recent Studies on Rôle of Hypophyseal and Ovarian Hormones in Physiology of Reproduction. A. H. Morse, New Haven, Conn.—p. 397.
Motor Reeducation in Birth Injuries: Case. E. R. Carlson, New Haven, Conn.—p. 411.
*Distribution of Diphtheria Bacteriophage. G. H. Smith and Elizabeth F. Jordan, New Haven, Conn.—p. 423.
Blood Picture of Normal Laboratory Animals. R. A. Scarborough, San Francisco.—p. 431.

Distribution of Diphtheria Bacteriophage.—For the past three years, Smith and Jordan have made a study of bacteriophage in its relation to *Bacterium diphtheriae*. They state that bacteriophage active for *B. diphtheriae* may be recovered from diverse sources. It has been obtained from sewage; from the throat washings, the stools and urine of clinical cases of diphtheria (in one instance ten days after the organism had disappeared from the throat); from carriers; from the throats of persons who were not diphtheria carriers, or from whom the so-called diphtheroid forms could be recovered by ordinary cultural methods; from the air and from the floor sweepings of laboratories in which work with diphtheria bacteriophage was being conducted, and from 100 per cent of all field cultures of diphtheria bacilli subjected to examination. The significance of this wide dissemination of diphtheria bacteriophage cannot be determined; whether or not it represents an exceptionally delicate index of contamination pointing to a wider distribution of diphtheria bacilli or of forms allied to them remains unsolved. The relationship, if any exists between diphtheria bacteriophage and diphtheritic infection, is likewise unknown. Possibly some of the conflicting reports of the occurrence of spontaneous appearance of bacteriophage may be explained by the demonstration that the bacteriophage corpuscle or the lytic principle adherent to particulate matter may be recovered from the air and from dust.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

4: 193-248 (May) 1931

Diathermy in Treatment of Pneumonia. G. Simon.—p. 197.
Case of Papilloma of Jejunum. J. B. Higgins.—p. 203.
Progressive Myositis Ossificans. J. H. Mather.—p. 207.
Physical Characteristics of Scheidt Ultraviolet Ray Tube. E. A. Owen and P. Wright.—p. 211.
Multix Tube. F. D. Owen-King.—p. 218.
Experiments in Producing Soft Structure Radiographs with High Voltage Technic. N. Booker.—p. 232.

Edinburgh Medical Journal

38: 289-340 (May) 1931

Social Psychiatry. D. K. Henderson.—p. 289.
Bacterial or Infective Endocarditis. W. S. Thayer.—p. 307.

Indian Journal of Medical Research, Calcutta

18: 1059-1398 (April) 1931

Distribution and Cause of Endemic Goiter in United Provinces. H. Stott, B. B. Bhatia, R. S. Lal and K. C. Rai.—p. 1059.
Effect of Opium on Blood-Sugar of Nondiabetics. R. N. Chopra and J. P. Bose.—p. 1087.
Action of Venom of Indian Cobra (N. Naia Vel Tripudians) on Certain Protozoa. R. N. Chopra and J. S. Chowhan.—p. 1103.
Experimental Investigation into Action of Venom of Indian Cobra (Naia Naia Vel Tripudians). R. N. Chopra and V. Iswariah.—p. 1113.
Early Stages of Some Indian Mosquitoes: Megarhinus. P. J. Barraud.—p. 1127.
Notes on Some Anopheline Mosquitoes Collected in Sierra Leone Including Differentiation of Anopheles Dthali Patton (Mediterranean) as Distinct Species from Anopheles Rhodesiensis Theo. (Ethiopian). S. R. Christophers and I. M. Puri.—p. 1133.
Some Observations on Bacterial Variation in Strain of P. Suiseptica. J. T. Cornelius.—p. 1167.
Eijkman's Test Applied to Water Supplies in Tropics. J. Taylor and A. N. Goyle.—p. 1177.
Notes on Some Indian Species of Genus Phlebotomus: XXVIII. Phlebotomus Purii N. Sp. J. A. Sinton.—p. 1203.
*Effect of Dilution on Properties of an Antiseptic. T. N. Seth and S. K. Ghosh Dastidar.—p. 1211.
Studies in Nutritive Value of Indian Vegetable Foodstuffs: I. Nutritive Values of Pigeon Pea (Cajanus Indicus) and Field Pea (Pisum Arvense, Linn). S. P. Niyogi, N. Narayana and B. G. Desai.—p. 1217.
Rat-Flea Survey of Rangoon: I. Port Area. Period from Jan. 5, 1928, to Jan. 4, 1929. G. G. Jolly, V. W. Fenn and R. Dorai.—p. 1231.
Estimation of Stature from Long Bones in Indians of United Provinces: Medicolegal Inquiry in Anthropometry. B. S. Nat.—p. 1245.
*Epidemiology of Cholera, with Especial Reference to Transmission. C. A. Gill and R. B. Lal.—p. 1255.
Two Intestinal Mastigophora from an Indian Bull. R. Knowles and B. M. Das Gupta.—p. 1299.
*Studies on Goiter Produced by Cabbage. R. McCarrison.—p. 1311.
Urinary Excretion of Iodine by Goitrous and Nongoitrous Persons in Gilgit. R. McCarrison, G. Sankaran and K. B. Madhava.—p. 1335.
Mechanism of Infection with Malaria in Children Living Under Endemic and Hyperendemic Conditions. G. MacDonald.—p. 1347.
Transmission of Indian Kala-Azar by Bite of Phlebotomus Argentipes. H. E. Shortt, R. O. A. Smith, C. S. Swaminath and K. V. Krishnan.—p. 1373.
Feeding Habits of Sandflies of Minutus Group. L. E. Napier.—p. 1377.

Effect of Dilution on Properties of an Antiseptic.—Seth and Dastidar studied the antiseptic power of mercuric chloride, phenol and ethyl alcohol in varying dilutions, the exact range being determined by preliminary experiments. The relative power of the various solutions, in preventing the growth of *Staphylococcus aureus*, was taken as a measure of their effectiveness. It was found that, up to a certain point, an increase in the dilution of an antiseptic that dissociates in solution causes a steady decline in its activity. Beyond this point there is a limited range in which further dilution definitely increases the relative effectiveness of the antiseptic. Still further dilution, however, once again lowers the activity of the antiseptic.

Epidemiology of Cholera and Its Transmission.—On the basis of epidemiologic and laboratory investigations, Gill and Lal suggest that cholera may perhaps have to be numbered among the insect-borne diseases. It would seem that just as the plague bacillus is sometimes transmitted through the medium of air (pneumonic plague) and sometimes, more especially in hot climates, by the agency of rat fleas (bubonic plague), so the cholera vibrio may perhaps be sometimes disseminated through the medium of water and sometimes, more especially in tropical countries, by the agency of house flies. It would moreover appear that in hot countries insect transmission is of predominant importance and that the strikingly dramatic outbreaks associated with the massive pollution of water are relatively rare incidents, if not accidents in the natural history of the disease.

Studies on Goiter Produced by Cabbage.—The purpose of McCarrison's investigation was threefold; to observe on rabbits the goiter-producing action of cabbage; to study the changes in iodine metabolism, as evidenced in the gland itself and in the urinary excretion of iodine, that might be brought about by the goitrogenic agent in cabbage; and to discover substances antagonistic to this agent. It was found that cabbage contained a potent goitrogenic agent. The goiter-producing potency varied at different seasons of the year; it was greatest in the autumn, least in midsummer and of intermediate degree in the early summer months. Steaming augmented the goiter-producing potency in one experiment and reduced it in another. Carrots, sprouted Bengal gram (legume) and freshly cut green grass appeared to possess antigoitrogenic properties though these were not of a high order. Both bran and sodium chloride augmented the goitrogenic potency of steamed cabbage. Viosterol enhanced the goitrogenic action of steamed cabbage; its action in this regard was uniform. The soaking of steamed cabbage in fresh calorine water neither favored nor disfavored the goitrogenic action of the cabbage, though it caused the iodine content of the thyroid to be low and the urinary excretion of iodine to be high; its action in these regards was fairly uniform. Thyroxine exerted a definite antigoitrogenic action more marked in degree but less uniform than that of iodine. Iodine exerted a definite antigoitrogenic action, less marked in degree but more uniform than that of thyroxine. Manganese chloride exerted a definite antigoitrogenic action equal in uniformity to that of thyroxine and in degree to that of thymol. Thymol exerted a definite antigoitrogenic action which, though less uniform than that of manganese chloride was, in the mean, equal to it in degree. The iodine content of the goitrous thyroid was in inverse relation to its size. The urinary excretion of iodine was in inverse relation to the size of the goitrous thyroid.

Indian Medical Gazette, Calcutta

66: 239-298 (May) 1931

Rhinosporidium Kinealyi Infection. P. K. Kurup.—p. 239.
Urobilinuria and Its Importance in Malaria. J. Singh.—p. 241.
Recent Advances in Infant Feeding. S. A. McSwiney.—p. 244.
Sanitary Significance of Presence of Pseudomonas Pyocyanea in Water Supplies. G. Mackey.—p. 248.
Some Modern Advances in Radiologic Diagnosis. G. Galstaun.—p. 250.
Notes on Treatment of B. Coli Infection of Urinary Tract. N. Sinha.—p. 255.
Pelvic Hydronephrosis. F. H. McCay.—p. 256.
Clinical Experiences with Percain as Spinal and Local Anesthetic. W. C. Spackman.—p. 258.

International Journal of Psycho-Analysis, London

12: 123-261 (April) 1931

Synthetic Function of the Ego. H. Nunberg.—p. 123.
Pregenital Antecedents of Oedipus Complex. O. Fenichel.—p. 141.
Some Unconscious Factors in Sonnet as Poetic Form. C. Rinaker.—p. 167.
Working of Unconscious Wish in Creation of Poetry and Drama. R. Haldar.—p. 188.
Contribution to Theory of Intellectual Inhibition. M. Klein.—p. 206.
Character Formation and Phobias of Childhood. W. Reich.—p. 219.

Journal of College of Surgeons of Australasia, Sydney

3: 311-412 (March) 1931

Laminectomy for Spinal Tumors. L. Rogers.—p. 311.
*Secondary Peptic Ulcer. F. G. Bell.—p. 331.
Sliding Hernia. E. S. J. King.—p. 339.
*Sympathetic Ramisection and Treatment of Spastic Muscle. A. E. Coates and O. W. Tiegs.—p. 346.
Arterial Embolectomy. C. Robertson, A. E. Moore and D. Robb.—p. 360.
Abnormal Kidney and Ureter. E. Hughes-Jones.—p. 367.
*Struma Ovarii, with Note on Iodine Content. E. S. J. King and Joan H. Norris.—p. 373.
Some Fascias and Fascial Planes. J. A. Jenkins.—p. 385.

Secondary Peptic Ulcer.—Bell reports eight cases of verified secondary peptic ulcer, which he has observed during the last five years, and expresses the belief that secondary ulceration is commoner than is generally assumed. At present he has under observation yet another patient who almost certainly by clinical and roentgen criteria has gastrojejunal ulcer but who has not so far come to operation. Furthermore, he has observed several other examples of unsatisfactory gastro-

jejunostomy associated with symptoms suggesting secondary marginal ulcer that responded to medical management, and it is an open question with patients complaining of intermittent epigastric pain, and sometimes milder forms of bleeding, how many are really suffering from a recrudescence of the primary ulcer or from superficial marginal ulceration which heals under treatment. It seems impossible to assess accurately the incidence of marginal ulceration because one is dealing with two classes of patients—those whose diagnosis is verified by operation and those whose condition is suspected on clinical and roentgen grounds and who probably contribute a considerable percentage of "failed" gastrojejunostomies. The passage of years has shown that one must abandon the commonly accepted dictum that gastrojejunal ulceration almost invariably follows the primary operation within a short time, say, within two years.

Sympathetic Ramisection.—According to Coates and Tiegs it must be admitted that there are some cases in which patients have definitely shown some improvement after sympathetic ramisection. But that these improvements are effected, as the originators of the operation believed, by removed excessive plastic tone, due to destruction of the sympathetic fibers subserving it, is unquestionably wrong. Just what the changes are due to one cannot determine. They may be vascular or mental in origin or merely the result of the reeducation. It would seem desirable that those who report such results should approach their data with the same critical attitude as a physiologist would his animal experiments. By this means it may be possible to determine the origin of the alleged improvements.

Struma Ovarii.—King and Norris describe three examples of struma ovarii with the history and clinical pathologic characteristics of the tumors. The presence of iodine was demonstrated in two of these. The specimens illustrated various types of growth with (1) thyroid tissue only, (2) thyroid tissue with one tooth and (3) thyroid tissue with many other tissues.

Journal of Laryngology and Otology, Edinburgh

46: 297-368 (May) 1931

*Abnormal Hemorrhage After Tonsil and Adenoid Operation. J. A. Keen.—p. 297.
*Ear in Congenital Syphilis: Some Clinical Observations. N. Asherson.—p. 326.

Hemorrhage After Tonsil and Adenoid Operation.—Keen reviews a continuous series of 9,344 tonsil and adenoid operations in children, with the special object of studying the question of excessive and dangerous hemorrhage. The subject is discussed under various headings and the main observations and conclusions are as follows: 1. Primary hemorrhage depends to some extent on the method of operating. The average amount of blood lost after the guillotine operation was found to be just under 2 ounces (60 Gm.) 2. The dissection and the guillotine operations are contrasted from the point of hemorrhage and from the point of view of operative "failures." The author strongly supports the guillotine method of enucleation and justifies this opinion by his end-results in the whole series. "Regrowth" of tonsillar tissue after complete enucleation does not occur in his experience. 3. Comparatively rare cases of excessive or reactionary hemorrhage occur in all large series of operations. In his hands the proportion of these cases was just over 1 per cent (110 cases among 9,344 operations). An analysis is made of the amount of blood lost in these cases, and the best methods of dealing with this complication are described. 4. It is shown that a second anesthetic is extremely dangerous in hemorrhage cases. An account is given of three personally observed fatalities, followed by a discussion on the possible causes of death. 5. Dangerous hemorrhage appears to come more often from the nasopharynx than the tonsil areas. 6. The literature on the prophylactic use of calcium lactate is reviewed. The author's experience, and figures of the amount of reactionary hemorrhage in the "bleeders," support the view that calcium lactate is useful in shortening the clotting time of the blood. 7. Secondary hemorrhage after the tonsil and adenoid operation is defined, with an analysis of all the cases that occurred during the ten year period. 8. The view is expressed that hemorrhage after the removal of tonsils and adenoids is due to deficient clotting power of the blood and that anatomic and surgical considerations are of secondary importance. Then follows a description of a simple test for determining the bleeding time and a theoretical discussion on coagulation time, bleeding time and the various hemorrhagic diatheses. 9. An account is given of cases in which bleeding times tests were applied, and of the way they illustrate the various theoretical points.

Ear in Congenital Syphilis.—On the basis of his observations in fifty cases of congenital syphilis, Asherson concludes that the "compression nystagmus" sign is a not uncommon concomitant in patients with congenital syphilis who have received extended treatment. A characteristic lead blue tympanic membrane is described. The infrequency of chronic otorrhea and the incidence of deafness in cases of congenital syphilis is commented on.

Journal of Oriental Medicine, Darien

14: 33-40 (April) 1931

Mental Sweating at High Atmospheric Temperature, Including a Paradoxical Phenomenon in Sweating on Palm of Hand. K. W. Kuo.—p. 33.
Abdominal Pregnancy. M. Sasaki.—p. 35.
Bath-Houses in China. K. Matsuoka.—p. 36.
Influence of Potassium Diphosphate on Agglutination. G. Saito.—p. 38.
Disinfection of Vegetables. T. H. Lu.—p. 38.
Purpura Haemorrhagica After Injections of Salvarsan: Case. S. Sato and T. Iwakiri.—p. 39.
Normal Blood Picture of Chinese. C. U. Tien.—p. 40.

Journal of Tropical Medicine & Hygiene, London

34: 129-144 (May 15) 1931

What Is Normal Type of Fever in Primary Cases of Benign Tertian Malaria? Is It Tertian or Quotidian? P. C. Koetsweg.—p. 129.
Notes on Mosquito-Borne Diseases in Southern Nigeria: Statistical Study in Anopheline Breeding Places. D. Anderson.—p. 131.
Note on Experimental Infection of Guinea-Fowl and Francolin with Trypanosoma Rhodesiense. J. F. Corson.—p. 133.
Detection of Lactosuria by Castellani-Taylor Mycologic Method. F. W. Willway.—p. 133.
Veld Winds. F. S. Cawston.—p. 133.

Kenya & East African Medical Journal, Nairobi

8: 1-34 (April) 1931

Observations on Plasmodium Falciparum with Especial Reference to Production of Crescents. P. C. C. Garnham.—p. 2.
Impressions of Winnipeg Meeting of British Medical Association, 1930. S. M. Vassallo.—p. 22.

Lancet, London

1: 1119-1170 (May 23) 1931

Neurology of Old Age. M. Critchley.—p. 1119.
*Adequate Treatment of Syphilis. E. T. Burke.—p. 1127.
Blood Culture in Tuberculosis. H. M. Schwabacher.—p. 1130.
*Constitutional Angiohypotony, or Idiopathic Permanent Arteriohypotension. A. Ferrannini.—p. 1131.
Chrysanthemum Dermatitis. G. S. Nightingale.—p. 1132.

Adequate Treatment of Syphilis.—Burke states that the main reasons why he adopted and teaches the alternating method of treatment of syphilis are: 1. Under the concurrent regimen, when arsphenamine and mercury were exhibited simultaneously, it was found necessary to interrupt treatment after the first eight or ten weeks in order to prevent the patient from showing signs of intolerance. An interval of from two to four weeks had to be allowed in which no therapy was given, so that the patient could recover from the toxic effects of the remedial agents administered. During this time the parasite was permitted, unmolested, to entrench itself in deep seated visceral structures, chiefly in the cardiovascular and central nervous systems. It therefore seemed more logical to try to arrange therapy so that rest periods were abolished and so that the parasite would be continuously subjected to an intense chemotherapeutic bombardment. This could be done only by exhibiting the drugs in alternate courses. 2. It was found that under concurrence there were many patients who developed jaundice, nephritis and exfoliative dermatitis. This was considered to be due probably to the double assault on the hepatic, renal and cutaneous systems. On changing over to the alternating system, the incidence of these complications, especially nephritis, almost reached the vanishing point. 3. Under the concurrent method, many patients were found to have become drug resistant or Wassermann-fast. This was thought to be due to the spirochete's having developed an immunity to the action of the remedial agents. It seemed natural, therefore, to reason that it would be better to administer the drugs in separate series so that no sooner did the parasite threaten to develop a resis-

tance to one agent than a new weapon was brought into action; and when the efficacy of that drug began to wane, a change was made back to the original one or to another new one if one was available. Experience has shown this reasoning to be correct, for, since the adoption of the alternating method, drug resistance and Wassermann-fastness have ceased to appear as practical difficulties. 4. A study of the mode of action of arsphenamine and of bismuth (for mercury has been discarded as being inefficient and a mere waste of time) also forced the author to give up concurrent treatment. Arsphenamine and bismuth do not act directly on the parasite. When injected into the body they stimulate the tissues to produce toxalbumins (arsenoxyl and bismoxyl) that are lethal to *Spirochaeta pallida*. In other words, the arsphenamine and the bismuth are the raw materials supplied to the body factory that produces the finished article capable of destroying the parasites. The manufacture of these proteo-arsenic and proteobismuth combinations inevitably throws some strain on the producing tissues of the patient. When the two raw materials are exhibited simultaneously, twice as great a load is cast on the productive mechanism as when only one is given. The tissues are thus, under concurrence, more easily exhausted and may finally cease altogether to produce the lethal toxalbumins. This results in drug resistance and Wassermann-fastness. 5. Many patients who formerly had become Wassermann-fast under concurrence have been treated during the past ten years by the alternating method. A large proportion of the cases, as a result, became permanently negative. 6. Under the alternating method there is a saving in time and in the amount of remedial agents necessary to cure a patient with early syphilis.

Constitutional Angiohypotony.—According to Ferrannini, certain difficulties arise in the recognition of constitutional angiohypotony. The first is the clinician's habit of mind; he is so accustomed to regard arterial hypotension as a result of myocardial insufficiency that he automatically looks to the heart whenever he meets a case. A patient with arteriosclerosis may have his heart in excellent condition and yet have a very low tension in his vessels. Another difficulty arises from the presupposition that accepts angiospasm as a cause of hypertrophy of the myocardium but does not realize that enlargement of the vessels may also call for increased effort on the part of the heart. With modern instruments for clinical and laboratory work it is possible to bring experimental exactitude to studies at the bedside, and this difficulty ought easily to be overcome.

Medical Journal of Australia, Sydney

1: 521-550 (May 2) 1931

Theoretical Aspects of Radiography. W. Moppett.—p. 521.
Ureteral Stone. R. K. L. Brown.—p. 523.
Neurosurgical Aids in Diagnosis of Hydrocephalus. R. A. Money.—p. 526.
Pityriasis Folliculorum (Demodex). H. Lawrence.—p. 529.
Note on Diagnosis of and Blood Cholesterol Changes in Major Convulsive Epilepsy. K. Maddox.—p. 531.

1: 551-590 (May 9) 1931

Diagnosis and Treatment of Some Common Obstetric Abnormalities. J. C. Windeyer.—p. 551.
Clinical Importance of Certain Chemical Constituents of Blood. F. S. Hansman.—p. 560.
Diseases of Gallbladder. J. W. Dansey.—p. 563.
Valve-Rectified Roentgen Ray Machines. J. G. Edwards.—p. 564.

Practitioner, London

126: 585-683 (June) 1931

Malpositions of Uterus. W. F. Shaw.—p. 585.
Rational Methods of Treatment of Asphyxia of the New-Born. Louise McIlroy.—p. 598.
Failed Forceps Cases. A. M. Claye.—p. 611.
Diagnosis and Treatment of Carcinoma of Uterus. V. Bonney.—p. 617.
Ovarian and Testicular Cancers: Their Response to Roentgen-Ray Treatment: Seventy Cases. J. H. D. Webster.—p. 636.
Heart Disease and Pregnancy. M. Newman.—p. 644.
Angina Pectoris and Coronary Occlusion. H. J. Starling.—p. 652.
Stones in Submaxillary Gland. H. Bailey.—p. 671.

South Africa M. Assn. Journal, Cape Town

5: 269-300 (May 9) 1931

Case of Calcified Pericardium. F. Forman.—p. 271.
Malarial Syndromes. H. H. Spencer.—p. 275.
Heart Cases. J. D. M. Claassens.—p. 278.
Sterility. A. I. Goldberg.—p. 279.

Tubercle, London

12: 337-384 (May) 1931

*Certain Movements of Lung and Effects of Phrenic Evulsion Thereon. C. A. Sprawson.—p. 337.
Chronic Pulmonary Infections in Childhood. A. K. Krause.—p. 344.

Movements of Lung.—Sprawson describes a method for measuring certain movements of the lung. The employment of this method in the examination of two patients with healthy lungs, and of two patients with pulmonary tuberculosis in whom phrenic evulsion was performed, has given results that point to the following conclusions: After evulsion of the phrenic nerve, the vertical movements of the lung on inspiration show considerable changes from the movements in the same lung before phrenic evulsion. The apex appears unaffected. The downward movement of the midpart of the lung is considerably lessened. Either the vertical movement at the base is practically abolished or else there is a movement in the reverse direction, slightly upward on inspiration (paradoxical). The drawing in of the bronchial tree toward the median line that is seen in the normal lung is seen also after phrenic evulsion. The movements have been modified and the tendency seems toward increase of the movement toward the median line due to mediastinal excursion from diaphragm action on the sound side. The number of observations is insufficient to draw definite conclusions from, and irregularity of this movement may be due to pleural adhesions. Evulsion of the phrenic nerve affects the respiratory movements of the base of the lung greatly, the movements of the middle part of the lung appreciably and the movements of the apex negligibly. Evulsion of the phrenic nerve is not likely to benefit tuberculous disease that is truly confined to the upper lobe, except by means of alleviating coughing or other subsidiary symptoms.

China Medical Journal, Shanghai

45: 385-486 (May) 1931

Studies on Glandular Fever (Drueseufieber Pfeiffer) with Lymphoid Reaction. C. M. Hasselmann.—p. 385.
Preventive Dentistry. A. M. Kazimirow.—p. 433.
Pseudoleptocardia Due to Childhood Pulmonary Tuberculosis: Case. D. G. Lai.—p. 441.
Pharmacy School at Cheeloo University. W. P. Pailing.—p. 443.
Mucocele of Ethmoid Sinus. S. Ts'en.—p. 453.

National Medical Journal of China, Peiping

17: 167-282 (April) 1931

Studies on Significance of Morphologic Changes in Bacteria: I. Streptococcus. S. M. Tao.—p. 167.
*Tinea of Scalp Among Adults in Peiping. F. K. Chen and T. J. Kurotchkin.—p. 185.
Occurrence of Paratyphoid Agglutinins in Blood Submitted for Widal Test. S. E. Pai and C. Fan.—p. 190.
*Method of Recording Respiratory Movements on Single Roentgenogram. T. Jung and C. M. van Allen.—p. 195.
Nutritive Value of Vegetarian Diets from Economic Standpoint. K. Lin.—p. 200.
Effect of Typhus Fever on Intracutaneous Tuberculin Reaction. C. J. Wu and H. A. Reimann.—p. 210.
Treatment of Tuberculosis in Some European Tuberculosis Clinics. W. Chin-Chang.—p. 212.
Pernicious Anemia in Chinese Patients: Case. C. S. Yang and C. S. Keefer.—p. 218.
Relapsing Fever in Children: Twenty-Six Epidemic Cases. F. Chu, Sarah Deitrick and S. Chung.—p. 224.
Relapsing Fever. H. Toyoda.—p. 233.

Tinea of Scalp.—Chen and Kurotchkin report twenty-one cases of tinea capitis in adults. Nine of the patients represented an infection persisting from childhood and twelve an infection acquired at and after puberty. The disease in adults is not so rare in Peiping as in America and Europe. In twenty, or 95.2 per cent, of the cases *Trichophyton violacum* was isolated. The virulence of this species of organism may account for the presence of infection among adults.

Method of Recording Respiratory Movements on Single Roentgenogram.—Jung and van Allen describe a method for recording and measuring respiratory movements on a single roentgenogram. The method is based on the principles of double exposure photography. It has the following advantages. It permits direct and accurate comparison of the respiratory positions of the chest. Accurate measurement may be made and permanent record kept. Sources of error from movement of the body as a whole between exposures are plainly detected. It does not require special apparatus and can be used with any roentgen unit. It is less expensive than the two film method,

Annales des Maladies Vénériennes, Paris

26: 241-320 (April) 1931

Gonorrheal and Nongonorrheal Urethritis. P. Asch.—p. 241.
*Syphilitic Leukoplakia of Bladder. B. Valverde.—p. 257.

Syphilitic Leukoplakia of Bladder.—After an extensive review of the literature on the subject, Valverde reports a case of leukoplakia of the bladder and draws the following conclusions: 1. Leukoplakia of the bladder is rare. 2. Its etiology is usually a chronic inflammation of a variable nature. However, it may be of syphilitic origin, as in the author's case. 3. In the clinical diagnosis, cystoscopic examination is a decisive element. For many reasons the author highly recommends it and emphasizes that cystoscopy should be employed in all similar diseases. 4. As antisyphilitic treatment gives definite results in most of the cases of leukoplakia of the bladder, the author advises that the patient be given such a trial treatment before surgical intervention is undertaken.

Archives de Médecine des Enfants, Paris

34: 269-340 (May) 1931

*Postmeasles Meningo-Encephalitis: Eight Cases. L. Morquio.—p. 269.
Acute Febrile Aplastic Pernicious Anemia in Children: Two Cases. L. Barbosa.—p. 284.

Postmeasles Meningo-Encephalitis.—Morquio, who has observed eight cases of postmeasles meningo-encephalitis, states that such complications are rare. His statement is confirmed by various other investigators, whose observations he reviews. Among his eight cases there were two cases of acute diffuse myelitis, two cases of acute general encephalitis, a case of circumscribed encephalitis (hemiplegic syndrome), bulboprotuberance form, polyneuritic and radicular case (meningeal syndrome) and a meningeal case simulating tuberculous meningitis. This reveals the protean nature of postmeasles changes, which may affect the central nervous system, partially or totally; but its most common type is encephalitis. The nervous phenomena in the author's cases always appeared at the end of the eruption period. Generally they come on rapidly with fever, headache and vomiting. But the predominating symptom is convulsions. Of the eight cases studied, convulsions were observed in six. The youngest infant was 2½ years of age, the oldest 7 years. Sex had no influence whatever. One of the patients with meningo-encephalitis died. In the rest of them the cure was complete and lasted for months and years. The author concludes that pure or mixed forms of acute encephalitis can be explained in different ways: as a simple coincidence in measles, as a common infection or as a phenomenon of a specific neurotropic virus of measles itself.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

47: 645-674 (May 4) 1931

Chronic Vasomotor Rheumatism. E. May.—p. 646.
Torsion Spasm: Case. C. I. Urechia and I. Groza.—p. 650.
Epiphyseal Syndrome: Case. C. I. Urechia and I. Groza.—p. 652.
Hepatic Melanosarcoma: Case. Dumitresco-Mante, Dulugea, Stoia and Ionesco-Craiova.—p. 654.
Mycotic Splenomegaly: Case. M. Labbé, Boulin, J. Besançon and Petresco.—p. 659.
*Hypochloremia in Chronic Nephritis with Azotemia. F. Bernard and Gaucher.—p. 662.
Familial Streptococcic Epidemic. E. Chabrol and R. Waitz.—p. 669.

Hypochloremia in Chronic Nephritis with Azotemia.—Bernard and Gaucher report a case of hypochloremia in the course of chronic nephritis with azotemia. They state that by the administration of sodium chloride they obtained a remarkable and speedy improvement of the condition of the patient. Nevertheless they recommend to the practitioner to be always ready for the unfavorable symptoms that may accompany the illness, especially after medication. They report also the case of a patient with an extremely acute mercurial nephritis in whom the height of the blood urea was maintained for six days at a 5 Gm. level and whose general condition finally resulted in a fatal issue. On account of a considerable hypochloremia, sodium chloride was administered, and a few days before death the chloride content of the blood became normal. In the case of hypochloremia with azotemia the authors admit that the anatomic changes in the kidneys were not marked. Sodium chloride treatment constituted an effective therapy against the sudden unexpected symptoms which so often develop in those conditions. The authors bring out also that, contrary to former views, in advanced cases of chronic nephritis one should not expect much success from the treatment recommended.

Bulletins et Mém. de la Soc. Nat. de Chirurgie, Paris

57: 593-618 (May 9) 1931

*Treatment of Arterial Aneurysms of Popliteal Space. Brugeas.—p. 594.
Inner Paracondylar Traumatic Osteomas of Femur. P. Guillaume-Louis.—p. 603.
*Treatment of Scleroderma by Parathyroidectomy. R. Leriche and A. Jung.—p. 609.

Treatment of Arterial Aneurysm of Popliteal Space.—Brugeas states that in the presence of popliteal aneurysms one should always open the sac at the first opportunity and systematically remove blood and especially the adherent clots by an energetic curettage. Then the surgeon has to obliterate by a strong ligature or by a silk suture the arterial orifices in the sac. The author advises careful dissection of the irregular walls of the sac and its adhesions, which are apt to form with the rest of the elements of the popliteal space. He does not recommend the use of any local medication such as arsenic or mercury preparations. He believes that all drugs are rather injurious in such cases because they will interfere with the progressive resorption of the sac as well as delay the reestablishment of the collateral circulation. After verifying that hemostasis is perfect, one should leave the wound of the well curetted sac alone and close it without drains. The author concludes by saying that by such a method he performed an extremely simple, rapid and harmless operation, which reduced to a minimum the chances of gangrene due to ischemia.

Treatment of Scleroderma by Parathyroidectomy.—Leriche and Jung performed parathyroidectomy on two patients with scleroderma and after some preliminary considerations drew the following conclusions: It is indubitable that scleroderma is a surgical disease. It may be treated by various sympathetic operations or by a parathyroidectomy. At present the results obtained in employing the two methods are equal. The future will tell whether one should combine the two methods or prefer one to the other. Sympathectomy has already demonstrated its well established place and revealed the mechanism of the ailment. In serious cases of parathyroidectomy it has one advantage over sympathectomy. But it seems to invoke general as well as local changes afterward. By both methods one may now cure those patients who have been considered incurable.

Journal de Chirurgie, Paris

37: 481-640 (April) 1931

*Surgical Edema: Experimental Researches of Phlebitic Origin. R. Leriche and A. Jung.—p. 481.
Cancer of Bladder: Technic of Total Cystectomy. B. Fey and H. Bompart.—p. 496.
Localized Intracranial Hemorrhages of Traumatic Origin. J. Patel.—p. 512.
Hydatid Cysts of Lung: Treatment and Results. G. Carajannopoulos and P. Lazarides.—p. 529.

Surgical Edema of Phlebitic Origin.—Leriche and Jung in their experimental researches on dogs reached the following conclusions: The suppression of large segments of veins is well sustained by the dog regardless of its age. This is followed by an edema, which appears on the next day after the operation and does not last more than from two to eight days. At the end of this period it is impossible to disclose any objective or functional disturbances in the animal. Dogs without large veins appear functionally normal. The ligation following sclerosing injections into the large venous segments produces by itself a transitory edema; in general, this edema is always more marked and persists much longer than the edema due to suppression; namely, from eight to twenty-two days. The reestablishment of the circulatory equilibrium through collateral circulation therefore appears much more slowly than after resection. This phenomenon can be explained only by the irritation of the venous wall; i. e., by the production of a distant vasoconstrictor action. It cannot be explained by the soiling of the operative field with sodium salicylate because, after repeatedly washing out the venous trunk with sclerosing solution, the authors wash out the wound with physiologic solution of sodium chloride. All operative wounds always healed by primary union with no scab and without inflammation. In a case in which a subadventitial sclerosis was produced, it caused a secondary edema. If no ligature is applied there is no sudden circulatory disequilibrium

and apparently edema does not appear earlier than two days after the operation. In general, it is not of much importance. Anatomically, the change in the venous wall, which supervenes in the subadventitial zone, progresses in two directions: toward the periphery, where it produces periphlebitis, and toward the center where, by a diffuse connective tissue infiltration, it raises the endothelium and terminates in a genuine obliterative endophlebitis. Such exhibition of a progressive endophlebitis by a purely parietal lesion deserves to retain the investigator's attention from the clinical point of view. The authors think that sometimes this phenomenon is probably the cause of various inflammatory lesions of the pelvis. They report a case of a woman with postphlebitic disorders. A laparotomy disclosed one tube fixed to the pelvic wall and covering the external iliac vessels. The tube presented all the signs of an old inflammation. It was adherent to the inflammatory cicatricial tissue surrounding the iliac vessels for from 7 to 8 cm. The excision of the tube and the liberation of the vessels was followed in ten days by the disappearance of the ulcerations of the patient's leg which had resisted all kinds of treatment for two years. The authors conclude that in all their experiments they never thought about the possibility that the edema produced could be of lymphatic origin.

Journal de Médecine de Lyon

12: 271-302 (May 5) 1931

*Roentgenograms in Rickets of Early Infancy. Péhu, A. Policard and J. Boucomont.—p. 273.
Cured Intracranial Hypertension in Case of Tumor of Septum Pellucidum and of Lateral and Third Ventricles. E. Moniz and A. Lima.—p. 291.

Roentgenograms in Rickets of Early Infancy.—From a study of roentgenograms of infants with rickets, Péhu and his collaborators conclude that: 1. In the course of rickets of early infancy, roentgenograms furnish information of great value in helping to make an anatomic diagnosis and an immediate or a delayed prognosis as well as the necessary therapeutic indications. 2. The roentgenographic aspects of rickets vary: they demonstrate a regular evolution of a prolonged process; at times the evolution is spontaneous or it becomes modified by various therapeutic measures, especially by the direct or indirect irradiation with ultraviolet rays. 3. The roentgenograms of rickets of early infancy do not follow the so-called definite rhythm that should correspond to the different ages of early infancy. The observed individual variations are set up by complicated causes, among which the general nutrition holds an important place. 4. To be of any significance the interpretation of the films must be based on the macroscopic anatomy.

Liége Médical

24: 629-664 (May 10) 1931

*Biologic Diagnosis of Pregnancy. Adèle Brouha.—p. 629.
Prophylaxis of Syphilis. C. Levaditi.—p. 643.

Biologic Diagnosis of Pregnancy.—Brouha did research in connection with the Zondek and Aschheim experiments with urine of pregnant women in the diagnosis of pregnancy. Instead of mice, rabbits were used as experimental animals. She draws the following conclusions: 1. In injecting urine it is better to use the intravenous route. The reaction possesses incontestable advantages. The field of selecting the animals is wider with rabbits than with any other animals, for it is easy to procure rabbits at any time and in any number. It is not necessary to determine rigorously the weight of the animals or to maintain expensive breeding facilities, all of which require constant control. Moreover, the investigators are not obliged to kill the animals and often the same animals are used in many other experiments. 2. Most of the other hormonal experiments require one or many daily injections, which have to be repeated during long periods. The rabbit test does not require more than a single injection, which is done in the marginal vein of the ear. 3. The reaction is macroscopic and its readings are easy. It is not at all necessary to resort to microscopic slides. 4. The response can be obtained rapidly: occasionally within fifteen hours after injection, in general in twenty-four hours and exceptionally in forty-eight hours. All other tests require from five to ten days. The great rapidity of the reaction is of considerable advantage, and the reaction is indispensable when it is necessary to establish a diagnosis without delay (ectopic pregnancy). 5. The reaction is positive in the beginning of pregnancy. This was verified by the author in many cases of early pregnancy, especially in one case in which the delay of menstruation was not over twenty-four hours. 6. Finally, the reaction was always in accord with the clinical observations.

Paris Médical

1: 441-456 (May 9) 1931

Primary Tumors of Lateral Ventricle: Clinical Identification. M. Sendrail and J. Barthet.—p. 441.
Diphtheria in Uruguay. M. Rubino, J. J. Leunda and J. Moreau.—p. 447.
*Cerebral Tumor: Wernicke's Aphasia: Slow Evolution of Long Duration. D. Paulian and S. Axente.—p. 452.

Cerebral Tumor: Wernicke's Aphasia.—Paulian and Axente report a rare case of Wernicke's aphasia due to a cerebral tumor. For over twenty years the tumor had not manifested itself by a single symptom. Then, suddenly, violent and persistent headaches, vertigo, diminution in hearing and many other nervous symptoms developed. The authors state that cure of Wernicke's aphasia in a person 62 years of age is, of course, an impossibility. Their tentative diagnosis was correct, for after the patient died they found on necropsy in the left temporal lobe an angioglomatous meningoblastoma. They approve Marie's classification of the lesions in the zone of Wernicke as cortical and subcortical, producing Wernicke's aphasia and aphasia proper, respectively; the latter, according to Marie, is the severe form.

1: 457-484 (May 16) 1931

*Gallbladder-Duodenal Symphysis. P. Carnot.—p. 457.
Passive Congestion of Liver: Therapeutic Value of Nonsurgical Biliary Drainage. M. Chiray and P. Amy.—p. 463.
Polycholia. E. Chabrol.—p. 469.
Chronic Retention Icterus: Surgical Treatment. P. Banzet.—p. 478.
Roentgen Demonstration of Biliary Tract. Diocles.—p. 480.
*Functions of Biliary Epithelium. J. Dumont.—p. 481.

Adhesions of Gallbladder to the Duodenum.—Carnot reviews the etiology of adhesions of the gallbladder to the duodenum. He states that in a great majority of cases it starts as a primary infection of the gallbladder, more often as a cholelithiasis, but is also due sometimes to cholecystitis. Contrary to this, it starts in some instances as a primary duodenal infection, usually associated with a duodenal ulcer. In the beginning of the process the lesion is in the wall of the duodenum; the infection then spreads to the serosa, produces an indurated periduodenitis and finally reaches the gallbladder and the bile ducts. It would seem, *a priori*, that this would explain cases of repeated attacks of melena. But in these cases, neither the roentgenologist nor the surgeon has revealed an evident ulcer. One can then assume that the condition is caused by a hemorrhagic duodenitis. Such hemorrhages are more frequent in cholelithiasis than they are thought to be, since Kehr noted 100 instances of melena in 1,838 cases of gallstones in which operation was performed, and Paleski admits that in 10 per cent of cases of cholelithiasis there have been duodenal hemorrhages. Finally, one can imagine a primary infection of the serosa which attacks the gallbladder and the duodenum secondarily, as is the case in some types of plastic peritonitis. The history of a tuberculous or syphilitic infection (as in some of the author's cases) is an argument in favor of the rôle that is played by these two infections.

Functions of Biliary Epithelium.—Dumont concludes that the biliary tract, like the digestive tract, secretes mucus, a substance whose rôle in the microbian and cellular defense is as yet poorly established, although it is of great importance. The amount of this secretion is sufficient proof of its importance: one finds from 2 to 25 Gm. of mucus in 1,000 cc. of bile. The biliary mucus can be easily isolated from bile from a biliary fistula or from the fluid obtained by duodenal intubation. It coagulates slowly as an extremely fine reticulum and carries with it some cholesterol and some calcium bilirubinate. The origin of biliary mucus is not well known. It comes probably partly from cellular desquamation, but especially from epithelial secretion. Some cells of the villi resemble those of a renal calix; the glands of the mucosa are clearly muciparous. But their secretion is different from that of the stomach or the intestine. Specifically colored mucus is found only in the bile; the cells secrete only mucigen, and it is impossible to make a complete chemical differentiation. If the function of the mucus is to increase the viscosity of the bile, it acts by maintaining

the colloidal equilibrium of the substances dissolved in it. In the biliary tract as in the intestine or in the urinary passages the hypersecretion of mucus and its rapid coagulation interfere particularly with the elimination of the more viscous bile and they certainly play an important part in biliary stasis. They are especially marked during the period of cicatrization of acute suppurations or during subacute inflammations. Therefore the biliary epithelium is completely individualized from the functional as well as from microscopic points of view. Being derived from the primitive intestine, it possesses the same general functions: absorption or elimination of water and secretion of mucus. It reabsorbs and modifies some of the bile pigments that interfere with the metabolism of lipoids and of cholesterol. In spite of their vagueness, these functions are not negligible if one takes into consideration the large surface of the biliary tree.

Presse Médicale, Paris

39: 673-688 (May 9) 1931

Treatment of Paradigestive, Circulatory and Nervous Disorders with Bismuth Subnitrate. R. Bensaude and J. Cottet.—p. 673.
*Sclerosing Injections and Perivenous Sympathectomy. J. Louvel. —p. 676.

Sclerosing Injections and Perivenous Sympathectomy.—Louvel states that venous sclerosis no doubt produces a true perivenous sympathectomy with paralysis. He describes its mechanism and concludes with the following statement: One should always be cautious at first in the use of a valuable therapeutic measure. It is always better to belittle its merit than to exaggerate it. The best demonstration of it was clearly shown in the selection of cases for the curative fibrosis. The author advises that the indications for it be limited. The less prominent veins are just as important and need as extensive injections as the more prominent ones. He states also that one has to free oneself from all previous rules by learning just one rule: Spare the tunica adventitia as much as possible, for the danger is not inside but outside the vein. One should preserve also the nutritive tunica from the action of the caustic and therefore one has to employ solutions of much weaker concentration. It is better to administer four or five injections at the same spot than to give one single massive injection. Thus, one succeeds probably much more slowly but with no danger of lining the endothelium with concentric fibrinous stratifications, producing little by little the obliteration of the vessel passing from the tunica muscularis toward the inside. One must also spare the external tunica (the same as one spares the mesentery in surgery), not as much for the point at which one causes sclerosis but for the vitality and nutrition of the adjacent venous walls.

39: 689-712 (May 13) 1931

*Surgical Tuberculosis: Seven Thousand Two Hundred and Fifty-Nine Cases. E. Sorrel, P. Bufnoir and J. Fumet.—p. 689.
Kala-Azar in Greece. W. Benisi.—p. 692.
Coupled Rhythm: New Type. E. Géraudel.—p. 696.
Systematization of Examination of Fresh Urine. H. Paillard.—p. 699.

Surgical Tuberculosis.—Sorrel and his associates report their observations on 9,512 patients who were treated at Berck Maritime Hospital for the period 1920-1930. Of these patients, 7,259 were treated for tuberculosis and 2,960 for nontuberculous ailments. Children composed 7,095 cases, and adults 2,417. Of the tuberculous patients, 5,203 were treated for osteo-articular tuberculosis and osseous tuberculosis. The Berck Maritime Hospital is especially equipped for surgical treatment of tuberculosis. The authors review in detail the frequency of surgical tuberculosis, its diagnosis as well as differential diagnosis; they describe some rare cases of the disease and conclude by stressing the great importance of roentgenography in the proper treatment of tuberculosis.

39: 713-728 (May 16) 1931

Imbibition Test and Mechanism of Production of Edemas. M. Labbé, P. L. Violle and F. Nepveux.—p. 715.
*Treatment of Arthroses. F. Coste, J. Forestier and J. Lacapère.—p. 715.

Treatment of Arthrosis.—Coste and his associates state that to outline the treatment of arthrosis it is only necessary to recall its pathogenic factors and its principal lesions. Among them they enumerate: (*a*) circulatory factors (arteriosclerosis, disorders of venous circulation), endocrine factors (especially ovaries), humoral factors (autointoxication or heterointoxication, sometimes gouty diathesis), limitation if not absence of inflammatory processes, and degenerative or dystrophic nature of the lesions; (*b*) importance of local mechanical factors (accidental or habitual static traumatisms) and local disorders of a circulatory, nervous or trophic nature; and (*c*) hypertrophic lesions, osteophytic, primarily osteocartilaginous and very little synovial, which wear away and destroy the centers of the cartilage. Under general medical treatment the authors include vaccines, protein therapy and phlogotherapy. They do not advise intravenous injections of colloidal substances. They recommend the use of chemotherapy, emphasizing the fact, however, that gold preparations are inactive. In the local treatment, they advise intra-articular injections of various lubricating substances. Para-articular proliferations may be influenced directly by local injections of various substances, such as iodized poppy-seed oil or mixtures with camphor or benzyl salicylate as the base. For disorders of a mechanical origin the authors advocate the surgical and orthopedic correction. Among the measures of physical therapy, they outline vasodilator and calorific procedures for the activation and the modification of the local circulation; hot baths, various heating apparatus, infra-red rays, actinotherapy, heliotherapy and diathermy; also radiotherapy, ionization of the lesions of arthrosis, massage and immobilization.

Revue Belge des Sciences Médicales, Louvain

3: 299-446 (April) 1931

*Syndrome of Meningocerebral Toxemia in Cirrhosis of Liver. N. Fiessinger.—p. 299.
Vasomotor Pathology: Clinical and Therapeutic Observations. L. Langeron.—p. 306.
*Experimental Production of Acute and Chronic Nephritis by Injection of Bismuth Salts. Pasteur Vallery-Radot, M. Dérot and Gauthier-Villars.—p. 319.
Dilatation of Bronchi: Information Obtained by Injecting Iodized Poppy-Seed Oil. E. Sergent.—p. 325.
*Pain Provoked by Visceral Attack as Consequence of Humoral Changes in Adjacent Tegument. M. Roch.—p. 332.
Virulence of Tuberculous Filtrable Virus Transmitted by Successive Passages from Lymph Nodes to Lymph Nodes in Guinea-Pig. E. Aubertin.—p. 338.
Fixators, Antifixators and Defixators of Calcium. G. Mouriquand.—p. 349.
*Angina Pectoris Complicating Left Thoracobrachial Neuralgia. C. Lian. —p. 354.
Pathologic Disorders of Ear in Connection with Dental Lesions. J. Vernieuwe.—p. 366.
Oubain-Digitalin. L. de Beco.—p. 373.
Typhoid: Diagnosis and Treatment. R. Verhoogen.—p. 392.
Significance of Biosis. M. Ide.—p. 406.
*Angiomas of Bladder. M. Schillings.—p. 412.
Speed of Erythrocytic Sedimentation in Pulmonary Tuberculosis. G. Thérasse and L. Willaert.—p. 426.
Myeloid Metaplasia in Saponin Intoxication. A. Wuyts.—p. 440.

Meningocerebral Toxemia.—Fiessinger states that in the course of cirrhosis of the liver one observes a series of toxic syndromes that have been grouped together under the heading of liver insufficiency. He divides them into meningeal and cerebral syndromes. The meningeal syndromes are encountered frequently. They are generally observed at the terminal stage of cirrhosis. The patient's appetite diminishes and sometimes edema develops. The appearance of the meningeal complication is announced by a cerebral torpor during the day and by restlessness at night. In some instances the meningeal syndrome becomes so prominent that one might think of tuberculous meningitis. Lumbar puncture allows one to diagnose the infectious nature of this ailment. The meningeal syndrome is always of grave prognostic portent. The cerebral syndromes are often intimately associated with the meningeal syndromes. Besides the so-called quiet subdelirium of icterus gravis, one can easily observe in the course of cirrhosis of the liver all forms of cerebral manifestations: apathy with emotional indifference at the onset and torpor, which is later transformed into coma. There occur also hallucinatory deliriums and mental confusion with amnesia as in Korsakoff's psychosis. These psychic disorders are not the only ones. One may observe convulsive crises that resemble strikingly the eclamptic crises. The author describes in detail his laboratory experiments and the technic employed. He states that azotemia and functional disorders of the kidneys never accompany these syndromes. In conclusion, he emphasizes that the meningocerebral nervous disorders observed in the terminal stage of cirrhosis of the liver may be connected with the abnormal elevation of the polypeptidorrhachia, in comparison with the total nonprotein nitrogen.

Experimental Acute and Chronic Nephritis.—Pasteur Vallery-Radot and his collaborators performed experiments on nineteen rabbits, with the aim of producing nephritis by the intramuscular injection of bismuth hydroxide suspended in oil. By varying the doses they were able to obtain an acute, subacute or low grade toxemia. The authors consider that the experimentally produced lesions of the tubules might be the origin of azotemia and albuminuria. They demonstrate some of their anatomophysiologic parallels. They also state that the comparison of the results obtained by their microscopic and physiologic studies reveals: 1. An azotemia without any glomerular lesions; this is a new proof of the elimination of urea by the tubules, a fact that is admitted by a number of authors and that seems to be well demonstrated by microchemical researches. 2. The possibility of an albuminuria of tubular origin.

Visceral Pain.—Roch performed some clinical experiments of other authors in regard to the phenomenon of visceral pain. He states that, with necessary reservations, it seems that one may conclude provisionally that in visceralgias the painful phenomena are frequently accompanied by circulatory and humoral disturbances of the integument which accelerate the resorption of the wheal in the McClure-Aldrich test. These changes, which in general cannot be detected by the usual means of investigation, may be easily revealed by the test.

Angina Pectoris.—Lian reports five of the thirty-six cases he has observed of angina pectoris complicated by left thoracobrachial neuralgia. In his opinion, an angina pectoris is a syndrome in which the distressing sensation has the following five characteristics: 1. It may be sternal or precordial. 2. It can attack the adjacent regions, especially the left arm. 3. It is accompanied by anguish; i. e., by a double sensation, a psychic sensation of fear, of impending death, and a thoracic sensation of weight, of constriction, of swelling. 4. It manifests itself in the form of crises. 5. It is the expression of a lesion or a functional disturbance of the heart or the large vessels. The author outlines his mode of treatment of angina pectoris. In the latter he includes glyceryl trinitrate, acetylsalicylic acid, acetphenetidin, amidopyrine and sodium salicylate; subcutaneous injections of procaine hydrochloride, of sodium iodide, of oily solutions of benzyl salicylate and of camphor, and paravertebral injections of procaine hydrochloride. The method of choice in the treatment of the cervicothoracobrachial neuralgias consists in roentgen irradiation of the roots of the brachial plexus and also of the cardiac plexus if anginal crises are present.

Angiomas of Bladder.—Schillings presents an historical review of the subject. He considers angiomas of the bladder extremely rare. Tumors of the bladder are usually encountered in persons between 40 and 60 years of age, but with angiomas it is difficult to set a maximum of frequency according to age. Although in 25 per cent of all cases of tumor of the bladder the growths are multiple, in angiomas they are usually single. Their size is variable. Their configuration varies as in tumors of the bladder in general. The pathogenesis of angiomas of the bladder is still obscure. Their symptomatology does not present anything characteristic. The chief sign is hematuria. It is usually intermittent in character and in most of the cases it is profuse, thus producing in the long run a condition of anemia. Among other symptoms, one notes pain, frequently of micturition, and pyuria. The diagnosis of angioma of the bladder can be made only with the aid of cystoscopy. The treatment of angiomas is, of course, surgical except in tumors of small volume, when one may employ electrocoagulation.

Giornale di Clinica Medica, Parma

12: 393-458 (April 30) 1931

Changes Observed in Recent Years in Germany and Austria, in Manifestations of Hysteria. J. Wilder.—p. 393.
Ergotamine and Calcium-Potassium Equilibrium in Blood. A. Gasparini. —p. 402.
*Treatment of Postencephalitic Parkinson Syndrome with Large Doses of Atropine Sulphate. G. Fattovich.—p. 414.

Treatment of Postencephalitic Parkinson Syndrome.—Fattovich reports that, whereas in some subjects atropine causes such secondary effects as to prevent its further administration, in others it is well tolerated. In these persons it causes no secondary effects even in large doses and acts favorably on certain manifestations of the Parkinson syndrome (bradykinesia, muscular hypertonia, salivation). For some subjects it is necessary to find the optimal dose, which depends on the individual. The action of this substance is purely symptomatic and the good effects cease when the remedy is discontinued. Since this method of treatment presents no manifest advantages over other methods previously employed, it will not supplant them. But, along with other remedies, it may be usefully employed to reduce the objective manifestations and to mitigate the subjective sensations.

Policlinico, Rome

38: 213-264 (May 1) 1931. Medical Section

*Fracture of Pituitary Fossa and Posttraumatic Syndrome. A. Pozzi. —p. 213.
Hypertrophic Pigmentary Cirrhosis of Liver. M. Michelazzi.—p. 227.
*Simmond's Disease. F. Costantini.—p. 251.

Fracture of Pituitary Fossa and Posttraumatic Syndrome.—Pozzi describes a rare case of adiposogenital dystrophy caused by a fracture of the pituitary fossa resulting from a cranial trauma. After discussing the pathogenesis of the case and the pathogenesis of adiposogenital syndromes in general, the author emphasizes the importance that cases of Fröhlich syndrome resulting from trauma may have for the clarification of the genesis of the disease in general.

Simmond's Disease.—Costantini describes a clinical case of Simmond's disease (hypophyseal cachexia) that developed in a woman, aged 34, after the last of eight childbirths, accompanied by profuse hemorrhage; in harmony with the present-day knowledge of the etiopathogenesis and the pathologic anatomy of this disease, he ascribes the condition to atrophy of the anterior hypophysis induced by repeated pregnancies and by the last hemorrhage. He discusses the peculiarities of the case and points out the rapid improvement brought about in the general condition of the patient, in whom the cachexia had continued unchanged for years, by means of hypophyseal organotherapy.

38: 655-690 (May 11) 1931. Practical Section

*Surgical Treatment of Nephritis. S. Marinacci.—p. 655.

Surgical Treatment of Nephritis.—Marinacci deals with the pathogenesis of nephritis dolorosa and toxic anuresis. He describes the anatomopathologic lesions and explains the operative methods. He reports nine cases in which operations were performed.

Riforma Medica, Naples

47: 281-320 (Feb. 23) 1931

Influence of General and Local Conditions of Organism on Genocutireaction (Cesi). P. Jedlowski.—p. 283.
*Assmann's Early Tuberculous Infiltrate. M. Sorrentino.—p. 285.
Solitary Osteogenic Exostoses in Early Childhood. R. Micotti.—p. 288.
Modern Views on Treatment of Gastroduodenal Ulcer. F. Bellelli. —p. 290.

Assmann's Early Tuberculous Infiltrate.—Sorrentino concludes that the discovery of Assmann's early tuberculous infiltrate, which Assmann himself termed the "infraclavicular infiltrate," is of great theoretical interest, as it tends to establish a new primary seat of tuberculosis, from which the disease spreads if it is not cured in time; the infiltrate is of great practical importance, since by prompt treatment the injury caused by a general infection can be avoided. The author, on the basis of Assmann's studies, examined clinically and roentgenologically about a thousand tuberculous patients and found Assmann's infraclavicular infiltrate in its pure form in about twenty cases. He describes in these cases the clinical picture, the course of the disease and the treatment, and compares this lesion with the well known apical incipient lesion.

47: 321-360 (March 2) 1931

Why a Patient with Cholecystitis Due to Calculi Complained Also of Pains in the Left Side. D. Giordano.—p. 323.
*Significance of McClure-Aldrich Test. M. Dalla Palma and V. Calderato.—p. 326.
Autohemotherapy in Mental Diseases. E. Zara.—p. 330.
Hippocratic Fingers and Incipient Acromegaly. A. Roncato.—p. 335.

Significance of McClure-Aldrich Test.—For the purpose of ascertaining possible differences in the absorption time, Dalla Palma and Calderato studied the effect of the McClure-Aldrich test at various hours of the day on the same subject in the same regions or in homologous regions, during sleep and during

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waking hours. They consider the test subject to multifarious causes of error and do not consider as proved the influence of waking hours and of sleep on the time of the disappearance of the wheal.

Semana Médica, Buenos Aires

38: 1209-1276 (May 7) 1931. Partial Index

Cancer of Lung: Diagnosis. D. Speroni.—p. 1209.
*Adenopathy in Leprosy as Early Symptom for Diagnosis. G. A. Basombrio.—p. 1213.
Herpes Zoster with Meningitis: Case. C. A. Videla and J. Peroncini. —p. 1242.
Anatomy of Medulla Oblongata as Considered in Diseases Necessitating Surgery. M. Balado.—p. 1258.

Adenopathy in Leprosy as Early Symptom for Diagnosis.—Basombrio states that in persons living in an environment of lepers, as well as in suspected lepers, the condition of the lymph nodes should be carefully investigated either to eliminate leprosy or to make an early diagnosis of it according to the presence or absence of adenopathy. The lymph nodes become enlarged early after the inoculation of leprosy. In 90 per cent of the author's cases among a group of 173 patients presenting several forms of leprosy in the early stages, the author observed the appearance of a generalized adenopathy as a secondary manifestation of the regional and transient adenopathy that follows the inoculation of leprosy. The enlarged nodes undergo characteristic changes that permit one to differentiate this form from any other form of adenopathy. The author considers the condition a specific early symptom of leprosy. The leprosy bacillus may be present in the lymph nodes early in the disease with the same frequency that it is present in leprous lesions or in the mucous membranes of the nose of patients in late stages of the disease. The observations made by the author comprised a search for the leprosy bacillus by means of puncture of the lymph nodes and microscopic examination of small lymph nodes removed by biopsy. He states that puncture of the lymph nodes constitutes a simple and practical method for an early diagnosis. The presence of a bacillary adenopathy not associated with any other symptom constitutes the lymph node type of latent leprosy, which in some cases undergoes a spontaneous cure. The microscopic examination of the lymph nodes is of greater diagnostic value than simple puncture of the nodes because it shows the characteristic changes in the tissues, which appear before the leprosy bacillus can be demonstrated by puncture. This examination, however, should be considered as a complementary method that is of diagnostic value when it is associated with other clinical or bacteriologic data.

Archiv für die gesamte Physiologie, Berlin

227: 239-366 (April 22) 1931

Hypophysectomy and Pancreatic Diabetes in Toads. B. A. Houssay and A. Biasotti.—p. 239.
Dependence of Stimulatory Action of One Cardiac Nerve on Tonic Stimulation of the Other Cardiac Nerves. C. L. Hou and E. T. Bräcke.—p. 251.
*Lutein Tissue and Male Sex Characters. E. Steinach and H. Kun. —p. 266.
Regional Invariance of Color Tone as Criterion of Primary Character of Color of Spectral Lights. G. Schubert.—p. 279.
Influence of Sympathicus on Striated Muscles. K. Schneider.—p. 293.
Conditioned Reflexes in Denervated Kidney. K. M. Bykow and I. A. Alexejew-Berkmann.—p. 301.
Production of Heart Fibrillation by High Frequency Alternating Currents. R. Bodó and G. Orbán.—p. 309.
Comparative Investigations on Pneumotachographs. A. Fleisch.—p. 322.
Irritation Metabolism and Stimulation Metabolism of Central Nervous System. J. von Ledebur.—p. 343.
Physiology of Embryo. C. Koschtojanz.—p. 359.
Blood Glycolysis as Inciting Factor of Coagulation Process. B. Stuber and K. Lang.—p. 361.

Lutein Tissue and Male Sex Characters.—In recent experiments, Steinach and Kun have proved that changes in the sex characters can be produced without either heterotransplantation of gonads or administration of hormones but by direct modification of the gonads in situ. They describe such experiments on the ovaries of guinea-pigs. On one group of mature animals, 8 to 10 months of age, they showed that irradiation with small doses of roentgen rays effected luteinization of the ovaries, enlargement of the genitalia and the development of typical male characteristics; vaginal smears revealed a continuous inhibition of the estrual function. Of course the changes produced by the irradiation were not of the same degree in all animals. A group of infantile guinea-pigs were given injections with hormone extracts of the anterior lobe of the hypophysis. Here again luteinization and development of male characteristics were noted, whereas the follicle tissues in the ovaries were obliterated. It is also pointed out that the same results were observed in mature animals. The authors reason that the concurrence of luteinization with the development of male sex characters indicates a causal relation between lutein cells and male sex characters, and that it justifies the assumption that the lutein tissue produces a hormone which has an action similar to that of the male sex hormone produced in the testis. Control experiments with corpus luteum extracts corroborated this assumption. On the basis of these experiments the authors reach the conclusion that, besides the hormones which influence the female sex characters, the ovary produces a hormone which influences male characteristics. This masculine hormone is localized in the lutein tissue. Thus there is a condition in the ovary which may be designated as hormonal bisexuality. Under normal conditions there is an equilibrium between the hormones. However, it is probable that certain pathologic conditions, such as hermaphrodism, and masculinization as the result of tumors of the ovaries, may be caused by a disturbance in the hormonal equilibrium.

Archiv für Gynäkologie, Berlin

145: 331-576 (May 6) 1931. Partial Index

Eclampsia and Ionic Balance. H. Rossenbeck.—p. 331.
Comparative Investigations on Calcium Content and on Condition of Calcium in Mother and Infant. O. Timpe and K. Hellmuth.—p. 411.
Condition of Potassium and Calcium During Gestation and Its Clinical Significance. R. Spiegler.—p. 423.
*Behavior of Sympathetic Nervous System in Mensual Cycle on Basis of Atropine Orthoclinostatic Reaction. H. Eufinger and H. Arntz. —p. 437.
Acid Tolerance and Alkali Tolerance in Pregnant Women. W. Scheringer.—p. 446.
Pathology of So-Called Penetration Zone: Genesis of Hydatid Mole of Chorio-Epithelioma. H. O. Kleine.—p. 459.
*Production of Temporary Sterility in Female Rabbits by Means of Sperm Toxins. F. Ardelt.—p. 474.
Diagnosis of Intra-Uterine Death of Fetus with Aid of Roentgenography. F. Saellä.—p. 495.
Comparison of Morphologic and of Biologic Functional Investigations on Corpus Luteum. H. Siegmund.—p. 512.
Unreliability of Manoiloff's Pregnancy Reaction. A. Kabisch.—p. 548.

Behavior of Sympathetic Nervous System in Mensual Cycle.—Eufinger and Arntz employed Danielopolu's combined pharmacologic-physical test method to determine the influence of the mensual cycle on the sympathetic nervous system. The method is based on the observation that the pulse of a human being who changes from the horizontal to the vertical position becomes accelerated (orthostatic acceleration), and that a change from the vertical to the horizontal position produces clinostatic retardation. If during this orthoclinostatic test the vagus is paralyzed by administration of atropine, the clinostatic retardation does not develop. This indicates that the orthostatic acceleration of the pulse is caused by stimulation of the sympathicus, whereas the clinostatic retardation is caused by stimulation of the vagus. The behavior of the pulse before and after atropinization permits an estimate on the functional capacity of the sympathicus and of the parasympathicus. The authors made tests on thirty women. Each one was examined once during the intermenstrual period and on the second day of menstruation. The results of the tests are summed up as follows: 1. In 83.4 per cent of the cases, menstruation had an influence on the sympathetic nervous system. In the remaining 16.6 per cent of the cases the sympathetic nervous system revealed no changes during menstruation. 2. In 63.4 per cent of the cases the change became manifest in a reduction of the reactivity to the stimulation produced by the change in position. This observation is in accord with the reduction of the epinephrine susceptibility during menstruation, which the authors had noted in former investigations. 3. In 20 per cent of the women, however, menstruation effected a marked increase in the excitability of the sympathetic nervous system. 4. This menstrually produced change in the reactivity to the orthoclinostatic stimulation is not dependent on the original responsiveness of the sympathetic nervous system, for in vagotonic as well as in sympathicotonic stigmatization there may be an increase or a decrease in the reactivity during menstruation.

Production of Sterility in Rabbits by Means of Sperm Toxins.—In the first part of the article, Ardelt evaluates various surgical methods that have been recommended to produce temporary sterilization. Then, following a review of the different biologic methods, he describes his own experiments with bull sperm that was injected into rabbits subcutaneously. Serum reactions in the sterilized animals convinced him that, by parenteral administration of sperm, antibodies can be produced, which are not specific for the type of spermatozoa that have been employed in the sterilization but for all types of sperm. This explains why sterility can be produced in animals by heterologous sperm. From the serologic point of view the spermatozoa are an exception in that they show organ specificity. That this organ specificity is present is proved by the fact that other organs of the immunized animal do not produce complement deviation. An extract from the myocardium of cattle when brought together with bull sperm immune serum produced no positive reaction of any kind. This proves that in the experiments in question the immunization was not entirely nonspecific. As yet the author has not been able to determine how the toxins influence the spermatozoa within the genitalia. He attempted to make fistulas into the uterus in order to be able to observe the action directly but found it impossible to keep the fistula aseptic for a prolonged period. Only in one normal animal, which had not received immunization treatments, did he observe that the uterus still contained living spermatozoa after eight hours. Later the fistula in this animal suppurated likewise. It is probable that the toxins are present also in the genital secretion, since in infectious diseases antibodies can be demonstrated in it. The interruption of an existing pregnancy is therefore impossible with this method, since this immunization is an active one against spermatozoa. On the basis of his observations the author concludes that in human beings it will be possible to demonstrate by complement deviation that antibodies are the cause of an existing sterility, that "sperm immunity" is present. Serum from fertile women always gives a negative complement fixation. Experiments on the serums of sterile women will be conducted later, and the author also wants to determine whether vaginal introduction of sperm may lead to antibody formation.

Klinische Wochenschrift, Berlin

10: 913-960 (May 16) 1931

Reinfection and Superinfection in Syphilis. B. Peiser.—p. 913.
*Functional Disturbances of Insular Apparatus in Acute Pancreatitis. M. Rosenberg.—p. 917.
Influence of Nervous System and of Hormones on Heart Action. R. Siegel.—p. 920.
Biologic Investigations on New Ultraviolet Lamps. K. Huldschinsky. —p. 925.
Demonstration of Action of Expectorants. T. Gordonoff and H. Merz. —p. 928.
Pathologic Peristalsis of Colon. A. Oppenheimer.—p. 930.
Negative Phase in Typhoid Vaccination. K. Kötschau.—p. 932.
Liver Therapy of Diabetes. H. Habs.—p. 935.

Disturbances of Insular Apparatus in Acute Pancreatitis.—Rosenberg found that, in half of the cases of acute inflammatory disorders of the pancreas (pancreatitis, necrosis of pancreas and abscess of the pancreas), disturbances of the insular function are demonstrable. Of greatest diagnostic significance is the determination of the amount of sugar in the urine and blood during fasting, because then glycosuria may develop without hyperglycemia, and it is also possible that hyperglycemia develops without glycosuria. The blood sugar curve following a dextrose tolerance test reveals only rarely a disturbance of the insular function in those cases of acute pancreatitis in which neither glycosuria nor hyperglycemia is demonstrable. Moreover, it should be considered that the blood sugar curve following a dextrose tolerance test is a less reliable differential diagnostic aid in acute disorders of the pancreas than are glycosuria and hyperglycemia. None of the three diagnostic methods permit a comparatively reliable estimate as to whether the acute pancreatitis will later lead to diabetes or not. If after an interval of several years diabetes develops, one may doubt whether the acute disorder of the pancreas is the cause. Between diabetes and acute pancreatitis there are constitutional relations which seem to indicate that the two diseases represent coordinated sequelae of the same constitutional anomaly.

Zeitschrift f. d. ges. experimentelle Medizin, Berlin

76: 635-845 (May 16) 1931

Polarization Measurements on Human Skin. H. Regelsberger.—p. 635.
Hydrogen Sulphide Content of Hair as Secondary Sex Character and Its Variability. K. S. Kossiakoff.—p. 653.
Influence of Autonomic Nervous System and of Endocrine Glands on Edema Tendency of Skin. J. Fliederbaum.—p. 659.
*Therapeutic Application of Iron. N. M. Nikolajew and L. Sparo.—p. 673.
Luminescence Analysis of Urine. Y. Yoneyama.—p. 680.
Influence on Bacterial Toxins on Epinephrine Secretion. S. Ono.—p. 689.
*Influence of Natural and Artificial Light on Basal Metabolism in Human Beings. G. Arnautov and E. Weller.—p. 694.
Salt Exchange Following Prolonged Administration of Small Quantities of Salt. K. Harpuder.—p. 709.
"Alteration" by Mineral Baths. K. Harpuder and M. Schiering.—p. 715.
Diffusion Processes on Human Skin. K. Harpuder.—p. 724.
Carbohydrate Metabolism During Ether Anesthesia by Means of Ombrédanne's Mask. H. Fuss.—p. 731.
Interferometric Investigations on Relations Between Carcinoma and Internal Secretion. L. Maiditsch.—p. 738.
*Hyperglycemia in Experimental Infection. T. Fukuda and Kô Itahashi.—p. 756.
Action of Procaine Hydrochloride. B. Brandi.—p. 760.
Water Content of Skin. F. Herrmann.—p. 780.
Investigations on Salivary Lipase. H. Kochner.—p. 792.
Localization of Blood Depots. A. Kahlstorf and H. Ludwig.—p. 804.
*Rôle of Hypophysis in Water Exchange. M. Goldzieher and J. Kaldor. —p. 819.
Renal Action of Several Dyestuffs. P. Rohoz.—p. 833.
Mode of Reaction of Vasomotor Centers. W. Raab.—p. 839.
Connection Between Function of Respiratory and Vasomotor Centers. J. R. Petroff.—p. 841.

Therapeutic Application of Iron.—According to Nikolajew and Sparo, the mechanism of iron therapy is as yet not clearly understood. Some assume that iron absorbed by the intestine serves as material for hemoglobin formation, others consider iron preparations as substances that stimulate the hematopoietic system, and a third group assumes that medicinal iron serves as protection against the loss of the iron ingested with the food. As the reason the mechanism of iron therapy is not clearly understood, the authors consider the fact that knowledge in regard to iron metabolism and regeneration of erythrocytes is still incomplete. After reviewing various data on iron metabolism, they reach the conclusion that the largest portion of iron liberated as the result of the disintegration of the erythrocytes is again utilized by the organism, and that only a small quantity is lost and has to be replaced. Consequently, it appears reasonable to assume that, in medication with iron preparations, the iron does not influence the hemoglobin formation directly but in some other manner. The authors studied the action of iron in experiments on guinea-pigs. It was found that the iron administered orally is stored mostly in the reticulo-endothelial cells of the gastro-intestinal tract and in the spleen. If the medication is prolonged for more than a month the iron is found also in other portions of the reticulo-endothelial system and in the epithelial cells of the uriniferous tubules. Absorption and elimination of iron are extremely slow. However, experiments with different iron preparations showed that the action mechanism varies. A highly dispersed colloidal iron preparation, for instance, did not accelerate the blood regeneration in guinea-pigs and there were no iron deposits to be found in the gastro-intestinal tract. Results of experiments with metallic iron indicate that iron in this form should be employed in hemolytic anemias of intestinal origin, in the secondary anemias in infants, and in all forms of anemia in which there is a disturbance of the synthesis of hemoglobin but in which the erythrocyte production is normal. Clinical experience has proved that metallic iron in the form of reduced iron is particularly helpful in anemias of nurslings. This fact is in accord with the experimental results, since in anemia during childhood the hemolysis is generally increased, while the formation of erythrocytes is normal, and in most instances intestinal intoxications exist. In these cases the iron reduces the absorption of toxins and also the disintegration of erythrocytes by blockade of the reticulo-endothelial system of the gastro-intestinal tract.

Influence of Light on Basal Metabolism.—Arnautov and Weller found that the basal metabolism of human beings is higher when the person is under the influence of either natural

or artificial light than when the person is in the dark. Pulmonary ventilation is likewise greater under the influence of light. The authors emphasize that all the other factors that influence the basal metabolism were considered, so that, although the increase is slight, it cannot be doubted that it is actually caused by the influence of light.

Hyperglycemia in Experimental Infection.—Fukuda and Kô Itabashi first review the various theories on the cause of the hyperglycemia that frequently develops in the course of febrile infectious diseases. Then they report their own studies on this problem. They induced fever in rabbits by injecting into the vein of the ear a solution of a bacterial protein of *Bacillus coli-communis*. The tests were made first on healthy rabbits and then on splanchnicectomized animals. The results of the experiments are summed up as follows: 1. Infection fever is not always accompanied by hyperglycemia. Fever and hyperglycemia are two unrelated phases of infection. 2. Hyperglycemia indicates that an infection is of medium severity, but also that the organism has adequate resistance power to overcome the infection. In slight as well as in extremely severe infection, hyperglycemia does not develop. 3. Infection hyperglycemia is caused by the action of the bacterial toxins on the sugar center and not, as some assume, by peripheral action on the suprarenals and on the liver.

Experiments on Rôle of Hypophysis in Water Metabolism.—Goldzieher and Kaldor found in experiments on guinea-pigs that injection of diuretic substances causes changes in the anterior lobe of the hypophysis; namely, a reduction in the eosinophilic substance and an increase of the basophils by transformation of other cells. These changes set in before the onset of the increased water elimination and disappear again soon after cessation of the diuresis. From this it may be inferred that these changes are a cause of the diuresis rather than, as Hoff and Wermer assumed, a result. The changes indicate the secretion of a diuretic hormone by the anterior lobe of the hypophysis. The existence of this hormone had been assumed by von Hann and was later demonstrated by Teel. Injection of an extract of the posterior lobe of the hypophysis has a peculiar effect on the water metabolism of an animal in which the reticulo-endothelial system has been blocked by injection of india ink. Instead of an inhibition of the physiologic elimination of water there is an enormous loss of water. Blocking alone causes considerable elimination of water. This indicates the great significance of the reticulo-endothelial system in the water exchange. While the extract of the posterior lobe influences the diuretic action of merbaphen only slightly in the normal, starving animal, it effects a considerable inhibition in the animal in which the reticulo-endothelial system has been blocked. This paradoxical behavior of the extract of the posterior lobe indicates a separate action of the hormones of the posterior lobe on the reticulo-endothelial system and on the water depots.

Vrachebnaya Gazeta, Leningrad

No. 7: 487-562 (April 15) 1931

Classification of Anemias. M. J. Livshitz.—p. 497.
*Prolonged Subfebrile Temperatures in Patients with Lung Ailments. A. J. Zibelnik.—p. 501.
Reticulo-Endothelial System in Pathogenesis of Acute Leukosis. O. Bykova.—p. 507.
*Biology of Spirochaeta Pallida: New Studies. N. D. Yushkov and K. R. Astvazaturov.—p. 510.
*Influence of Acid on Gastric Secretion. J. N. Sheftel.—p. 516.
Vulgar Sycosis: Treatment. A. S. Zenin.—p. 522.
*Gonorrheal Epididymitis: Comparative Evaluation of Methods of Treatment: Four Hundred and Twenty-Two Cases. A. S. Ginsburg.—p. 525.

Subfebrile Temperatures in Patients with Lung Diseases.—Zibelnik studied a large number of ambulatory patients, with the diagnosis of tuberculosis of the lungs. He states that in most of these cases the diagnosis was made with no foundation for it. His conclusions are as follows: The history of the occupation of such patients is, of course, of great importance; dust in the air, gases and particles of various materials used in the work produce pneumonoconiosis, which is followed by emphysema, decompensated heart and so on. This, in turn, brings on favorable circumstances for the development of sclerotic processes in the lungs and for the formation of often symptomless bronchiectasis. The author emphasizes that disproportion between the physical and roentgenographic observations almost always excludes the diagnosis of tuberculosis of the lungs, especially when tubercle bacilli are permanently absent in the sputum. To avoid gross errors the author recommends the following three measures: 1. Study of the pathologic changes of occupational diseases (especially those caused by the inhalation of dust, is important, because the wrong diagnosis of tuberculosis entails numerous useless and entirely unnecessary measures on the part of the attending physicians in dispensaries, sanatoriums and other similar institutions. 2. Measures of therapeutic character (proper treatment of pneumonias) as well as of prophylactic nature (transfer of such patients to other jobs where there is no dust) should be undertaken. Otherwise the mild lung conditions will develop into severe bronchiectasis and the patients become invalids. 3. One must constantly demonstrate to the ambulatory physicians the importance and necessity of the most extensive use of roentgenography and, in suspicious cases, of bronchography, as well as the taking of cultures for tubercle bacilli.

Spirochaeta Pallida.—Yushkov and Astvazaturov undertook 500 observations in regard to the influence on *Spirochaeta pallida* of various substances, as: (1) agents used in the prophylaxis and therapy of syphilis, (2) some physiologic substances of the human body and (3) of some nutritive materials widely used by people (as a factor in the nonsexual spread of syphilis). The authors' conclusions are as follows: 1. One must assume that *Spirochaeta pallida*, with considerable physical deformation under the action of some injurious agents, undoubtedly loses its syphilitic virus, whereas its avirulence with the loss of motility and with slight morphologic changes still must be proved by experimental infection. 2. The most certain prophylactic antisyphilitic agents are fresh solutions of corrosive mercuric chloride (1:1,000 and 1:2,000), solutions of phenol (from 1 to 2 per cent), denatured alcohol, ethyl alcohol and the foam of sapo viridis. 3. The foams of sapo domesticus and all dilute aqueous alcoholic solutions do not possess enough disinfectant power. 4. Among the eye remedies, the best as a prophylactic measure is a 0.5 per cent solution of silver nitrate, which has strong coagulating power. 5. Solutions of arsphenamine and of iodine salts do not have in vitro a spirocheticidal action. 6. *Spirochaeta pallida* demonstrates an increased sensibility toward acid and is more resistant to alkaline mediums. This can be explained by its biochemical properties and by the habitual environments that it encounters in the weakly alkaline reaction of the fluids of the human body. 7. The acidity of gastric juice, the strongly acid vaginal secretion and urine acidity stop the motility of the spirochetes, while blood serum, neutral saliva, slightly acid or alkaline urine do not. 8. Beer, buttermilk, strong tea and various fruit juices also stop their motility; port wine, lemonade and other similar beverages with a high content of acid coagulate and dissolve them. 9. Russian brandy does not stop their motility at once. In fresh milk as well as in brew mash and in running water, *Spirochaeta pallida* conserves its normal motility.

Influence of Acid on Gastric Secretion.—On the basis of seventy observations in studies of secretion and of peptic power of the gastric juice after various test breakfasts, as an alcoholic breakfast, a breakfast composed of alcohol and acetic acid with different acidity or a breakfast of citric acid, Sheftel reaches the following conclusions: Weak solutions of acid have little influence on the secretion of hydrochloric acid and pepsin. Only in exceptional cases do they stimulate the secretion of hydrochloric acid—in cases of lowered acidity. In cases of increased stomach acidity the weak solutions of acids are not as strong in their action as alcohol. Strong solutions of acid inhibit the secretion of hydrochloric acid and pepsin in all instances (in hyperacidity as well as in hypo-acidity) except in cases of ulcers of stomach in the active stage. In achylia the author did not notice the stimulating action of weak as well as strong solutions of acids. The amount of mucus was always on the increase with the acetic acid and alcohol breakfast; in cases of hypersecretion the evacuation was somewhat retarded. In cases with diminished acidity, bile secretion after an acetic acid breakfast occurred more often and much earlier

than after an alcoholic breakfast. In regard to the rationalization of strong solutions of acids in the treatment of various stomach diseases, the author did not draw from his experiments any practical conclusions. Clinical observations demonstrated well that the complex of the subjective complaints of patients with dyspepsia does not depend entirely on the amount of free hydrochloric acid or, more correctly, it depends much less on its amount. One has to take into consideration many other factors, as for example the motor function of the stomach, the condition of the patient's nervous system, and pyloric spasm. Therefore there is no reason for employing acetic acid, which will diminish the amount of free hydrochloric acid at the expense of the excessive formation of mucus and the secretion of bile. Moreover, under the excessive acidity that accompanies ulcers of the stomach the results are exactly opposite to those desired. With regard to the weak solutions of acids, in which it does not act in diminishing the acidity, this phenomenon must be explained in some other way. It may be that these weak acids provoke further dilution of the gastric juice.

Treatment of Gonorrheal Epididymitis.—In his studies of the complications of gonorrhea, Ginsburg selected only cases of epididymitis for the following two reasons: 1. Epididymitis is the most frequent complication of gonorrhea; it disables many otherwise healthy persons for months. 2. The results of treatment in epididymitis are much more favorable than in any other gonorrheal complication. The author's conclusions are as follows: 1. There is not yet a unique specific method of treatment of gonorrheal epididymitis as well as of all the other complications of gonorrhea. 2. Vaccines, protein therapy and physical therapy gave quite different results in various persons. It seems that the most favorable is the combination of two or more therapeutic factors. 3. Careful study of the general condition of the patient, regulation of his bowel functions, prevention of erections, absolute physical and mental rest as well as employment of all means for a simultaneous treatment of coexisting chronic infections and intoxications play a great part in the success of such treatment. 4. Thorough local treatment of the gonorrhea is also a factor of utmost importance.

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75: 2313-2484 (May 2) 1931

Carbohydrate Fermentation. O. J. Wijnhausen.—p. 2314.
Pyelography by Secretory Route. J. W. F. Heukensfeldt Jansen.—p. 2323.
*Epidemic of Polyneuritis of Peculiar Origin. J. W. G. ter Braak.—p. 2329.
Influence of Ovary Extract on Arthritis Associated with Climacteric. H. C. G. Tempelaar and J. van Breemen.—p. 2340.

Epidemic of Polyneuritis of Peculiar Origin.—Ter Braak describes ten cases of polyneuritis, all of which were characterized by predilection for definite, distal muscle groups; similarity of the manifestations; lack of objective sensory disturbances, and absence of the achilles tendon reflexes in the presence of knee tendon reflexes. In nine of these cases it was known that the women, from ten to twenty days before the onset of the disorder, had used the same or a similar abortifacient.

75: 2485-2560 (May 9) 1931

Fat Necrosis Independent of Pancreas Manifestations. W. M. de Vries.—p. 2486.
Hematuria. D. van Cappellen.—p. 2496.
*Avoidance of Operative Perforations of Nasal Septum. D. G. W. van Voorthuysen.—p. 2503.
Bifurcation of Femur According to Lorenz. J. P. Kruimel.—p. 2510.
Temporary Abolition of Isohemagglutination Capacity by Formaldehyde. M. A. van Herwerden.—p. 2517.

Avoidance of Operative Perforations of Nasal Septum.—Van Voorthuysen emphasizes that, in submucous window resection of the nasal septum, a precise and systematic method must be followed to avoid bad results and dangerous complications. Optimal anesthesia and maximal anemia must be provided in dilations of the internal nose. The mucous membrane incision will be adapted to the abnormality. The bony floor of the nose should be laid bare for a considerable distance on both sides. Extraperiosteal loosening must be carefully avoided; the loosening must be strictly subperiosteal. The periosteum-mucous membrane flap above and below the hyperplastic zone should be loosened, but this zone should be left untouched. One must make provision for counterpressure toward the head of the patient. The base of the cranium must be kept horizontal. The nasal floor must be kept in view, and too high loosening into the olfactory region must be avoided. An assistant should keep the periosteum-mucous membrane layers retracted, and the hyperplastic zone should be isolated and kept plainly in view. One should endeavor cautiously to loosen the hyperplastic periosteum, avoiding all tearing, and the loosened cartilage and bone should be removed. If this is not possible, a mallet and chisel should be used to isolate the hyperplastic bone from the anterior septum. One should not work out or pull out any pieces of bone but should use only the mallet, chisel and forceps. The bone closely attached to the mucous membrane should be dissected away, all bilateral tearing being avoided. In case of a bilateral tear in the mucous membrane, at least one of the tears should be carefully sutured. At the same time, a wide incision in the lateral part of the nasal floor should be made to remove the tension and prevent the otherwise unavoidable retraction. If one cannot suture intranasally, one can leave, in the presence of a unilateral tear, the other strip of bone untouched on the periosteum. One should see to it that, in case of a bilateral perforation, all edges of bone and cartilage are well covered by the edges of the mucous membrane perforation. All bone splinters should be removed, but one need not worry if a few are not discovered. If the outcome is bad, the cause should be sought in the imperfect technic.

Hospitalstidende, Copenhagen

74: 349-376 (March 26) 1931

*Pathologic-Anatomic Changes in Undulant Fever. F. Gregersen and T. M. Lund.—p. 349.
Incidence of Tuberculosis in Godthaab Medical District (South Greenland). P. Børresen.—p. 358.

Pathologic Changes in Undulant Fever.—Gregersen and Lund conclude that these changes in man are characterized by (1) a pronounced enlargement of the spleen with follicular atrophy with marked oversupply of blood and eventually hyperplasia of the pulp; (2) scattered foci of granulation tissue of simple type in the organs, and (3) parenchymatous degeneration in the organs, presumably due to the toxic effect of the infection.

74: 377-404 (April 2) 1931

Degree of Acidity in Food. A. Norgaard.—p. 377.
*Iodine Content of Blood, Especially in Exophthalmic Goiter. C. Biilmann.—p. 395.

Iodine Content of Blood, Especially in Exophthalmic Goiter.—Biilmann found the iodine content of the blood in ten normal persons to be from 0.008 to 0.018 mg. per hundred cubic centimeters. In patients with nontoxic goiter the iodine value of the blood was normal. In patients with thyrotoxicosis, it was increased by from 0.01 to 0.154 mg. per hundred cubic centimeters. The possibility is suggested that determinations of the iodine content of the blood may enable one to diagnose exophthalmic goiter before a definite increase in the basal metabolism occurs.

Ugeskrift for Læger, Copenhagen

93: 411-438 (April 16) 1931

Accident Insurance Cases: XVI. Principles for Treatment of Fractures and After-Treatment of Patients with Fractures. H. Abrahamsen.—p. 411.
*Postoperative Hyperpyrexia in Young Children and Treatment. A. Nielsen.—p. 416.
Fusospirillary Bronchitis with Asthma. S. N. Vendel.—p. 418.
Sting of Bees and Wasps: Review. A. Hjort.—p. 422.
"Ostrich" Stomach: Numerous Foreign Bodies in Stomach. J. Høeg.—p. 424.

Postoperative Hyperpyrexia in Young Children.—Nielsen reports three fatal cases in children otherwise well in whom a minor intervention done under superficial chloroform or ether anesthesia was followed by a rapid and marked rise in temperature and pulse rate together with a pronounced pallor and without other signs of abnormality. The hyperpyrexia is attributed to an acute disturbance in heat regulation, particularly a deficiency in giving off heat through the skin. In two later cases of postoperative hyperpyrexia in young children the administration of a cold bath followed by rubbing quickly reduced the temperature and restored the general condition to normal.

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